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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

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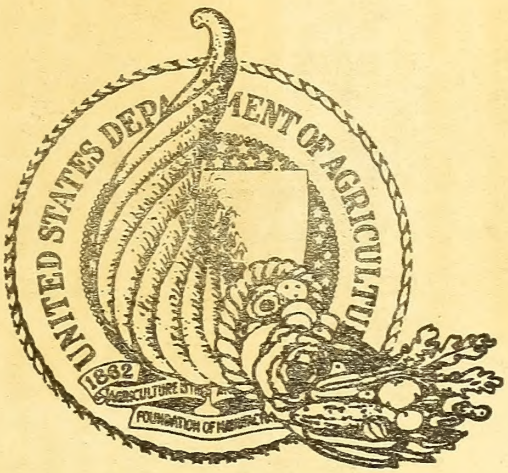
NEWS-LETTER



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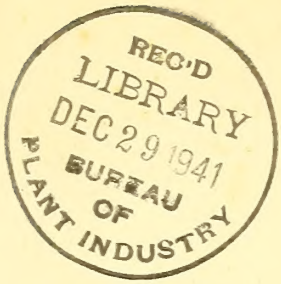

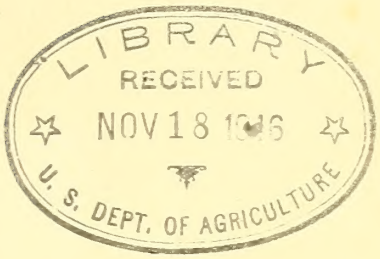

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. XIII U. S. Horticultural Station, Beltsville, Md. No. 1
January 1, 1941

Potatoes and Immigration! It is interesting to consider that the prominent part the Irish and their descendants have played in the development of the United States may very well trace back in good part to late blight of the potato! During the winter of 1845 great numbers of people died from starvation in Ireland as a result of the failure of the potato crop. The Irish were then consuming about 20 bushels of potatoes per capita each year, contrasted with the 3 bushels our citizens now use. The failure of the potato crop of 1845 was caused by late blight. Conditions were such that those who could readily do so emigrated to other countries, many Irishmen and their families coming to the United States. So you can see that late blight of the potato may have been a contributing factor in our growth!

The Irish potato is in itself, too, an almost perfect illustration of the so-called Irish "bull", for it is neither Irish nor a potato. It is actually a member of the nightshade family, and probably a native of the American continent, since its relatives are still found growing wild on the elevated regions extending from the southwestern part of the United States to the southern part of South America, particularly on some of the higher altitudes of Mexico, Peru and Bolivia, and the coastal regions and nearby islands of southern Chile.

"Many interesting legends have been written concerning the introduction of the potato into Europe, but few reliable facts are available," Dr. F. J. Stevenson told a recent meeting of the Kansas State Horticultural Society. "It is not hard to believe that the Spanish sailors, on their return from their many trips to the New World, brought back potatoes and introduced them into Spain and Portugal...

"It is supposed that on one of his trips Drake obtained potatoes in the West Indies for his ship's stores and that some of these were carried to Ireland about 1586...It is believed by some that the English Colonists of Virginia and Carolina obtained the potato from Spaniards or from other travelers perhaps about as early as it was introduced into Europe. More than 100 years later, stock was brought from Ireland and planted at Londonderry, N. H. It was from this introduction that the name 'Irish' potato originated. The name is still used, especially in the South, where it serves to distinguish it from the sweetpotato."

One version of the story, incidentally, is that when the Scotch-Irish in this settlement moved on to other locations in 1719, they left with their neighbors a few potatoes for seed. These the neighbors duly planted, and the plants flourished. However, the growers assumed that the balls were the fruit, and finding it impossible to prepare them in palatable form, abandoned the crop as worthless. The next spring's plowing, however, turned up tubers of great size and opened the eyes of the neighbors to the real use of the plant. From then on, the 'Irish' potato found an enthusiastic welcome. In fact its spread throughout the world is one of the marvels of agriculture for though practically unknown 350 years ago it is now produced in almost every important agricultural country in the world. Dr. Stevenson estimates the world's crop as more than 6 million bushels, of which the United States and Canada grows nearly half a billion bushels.

Incidentally, besides spurring Irish emigration, the ravages of late blight focused attention on potato diseases and the necessity for their control. In the long run we came to believe that diseases and pests of the potato are best controlled by the creation of new sorts resistant to their attacks, so we come down to the high water mark in the organization of the National Potato Breeding Program, in which 34 States and the Territory of Hawaii cooperate with each other and with us. This program has already yielded (1) Information on the inheritance of resistance to late blight in both vines and tubers; (2) promising varieties immune from late blight produced by crossing two species of Solanum (demissum and tuberosum); (3) indications that resistance to Fusarium wilt is to be found in the cultivated varieties, and that the development of varieties tolerant to its attacks is possible; (4) resistance to bacterial brown rot in Florida: (5) immunity from mild mosaic in the field; (6) immunity from the latent virus X; (7) the discovery that some varieties and seedlings become infected with leafroll in the field far less readily than others; (8) production of varieties tolerant to leafhoppers and flea beetles; and (9) resistance to psyllid yellows.

Of course, in addition to the important findings of a technical nature resulting from this new program, progress has been made in the creation and distribution of new varieties that are becomming prominent in the potato industry, including the Katahdin, Chippewa, Earlaine, Houma, Sebago, Warba, Red Warba, Pontiac and Sequoia.

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SUBTROPICAL FRUIT INVESTIGATIONS

W. W. Aldrich, U. S. Date Garden, Indio, Calif.

"Crawford, Moore and I have been assembling and studying the results of our work upon effects of irrigation of the Deglet Noor date upon the quality of the fruit," he writes November 19th.

"Moore's measurements of leaf elongation during 1940 show an immediate reduction in rate of elongation when the average soil moisture in the second, third or fourth foot depths was depleted into the wilting range, as determined by Furr. Crawford's fruit growth curves, obtained by random sampling rather than measurement of attached fruits, consistently show a reduction in rate of fruit enlargement at the same time that the reduction in rate of leaf elongation occurred. Thus both from leaf and fruit growth measurements we obtained relatively accurate indices of when prolonged water deficits occurred in the palm.

"We had rather expected that appreciable water deficits for a period of three or four weeks would increase the "shrivel" of the ripening fruit; but our data are, for one reason or another, so variable that no definite conclusion can be reached. Since we found that the rate of dry matter increase in the fruit is not measurably influenced by relatively prolonged and appreciable water deficits in the palm, we are inclined to think that the carbohydrate supply to the fruits has not been significantly altered in most of our plots. Therefore, we are assuming for the present that the shrivel during ripening is related to carbohydrate and not water supply at some time during the growth period, and that the carbohydrate supply to the fruits was not greatly influenced by three-week periods during the summer when soil moisture in at least 80% of the root zone was within the wilting range. Our theory that shriveling of the ripening fruit is related to carbohydrates supplied to the fruits is strongly substantiated by Nixon's results showing large differences in shrivel and in dry matter per fruit in relation to relatively small differences in number of leaves per bunch of fruit.

"Sufficient cracking of the Deglet Noor fruit during mid-summer to result in a subsequent drying out and darkening of the tip, called "blacknose", is a factor which reduces the grade of fruit in some seasons. Laboratory studies by Furr in 1938 very definitely indicated that the cracking of the fruit was influenced in some way by water entering the fruit from the palm rather than by water entering the fruit from the surrounding air. During the summers of 1939 and 1940 I was able to obtain cracking of the fruit on the palm when one strand of fruits was surrounded by a rapidly moving stream of air at approximately 90% relative

SUBTROPICAL FRUIT INVESTIGATIONS

W. W. Aldrich (continued)

humidity at temperatures that would give a vapor pressure deficit of the air of about two millimeters of mercury. Unless the diffusion pressure deficit in the fruit cells involved greatly exceeded 100 atmospheres (extremely doubtful), the increased turgor causing cracking could not have been due to absorption of water from this air at 90% humidity.

"During 1939 Furr was able to measure a decreased rate of transpiration from fruits from palms showing water deficits. On these same palms we obtained a reduction in the amount of cracking of the fruit during humid weather. To explain all these results we assume that the excessive turgor causing cracking occurs when for a sufficient period of time the rate of water movement through the palm into the fruit exceeds the rate of water movement from the fruit into the air. The effectiveness of water deficits in the palms in reducing serious cracking and therefore "blacknose", is thus theoretically indicated.

"This season considerable "blacknose" occurred in the three date gardens where we had irrigation plots using the Deglet Noor variety. In the Cavanagh garden with a relatively light crop of fruit, the grower's irrigation practice resulted in "blacknose" development on about 30% of the fruit, but in two different plots with relatively great water deficits for three or four weeks during the period of fruit susceptibility to cracking, less than 2% of the fruit developed "blacknose". In the Peck garden the grower's irrigation practice resulted in 12% "blacknose" but our plot with water deficits during July had less than 1% "blacknose". At the Martinez Research Station irrigation every ten days resulted in 10% "blacknose", whereas extreme water deficits during July resulted in less than 1% "blacknose". These results in our field plots seem to substantiate our theory as to the fundamental cause of cracking which predisposes the fruit to "blacknose" development.

"However, the extreme water deficits used during July in 1940 to reduce "blacknose" in some way injured the fruit with the result that in September over half of the fruit on certain plots loosened and fell as it was beginning to ripen. This had not occurred in 1938 and 1939. However, water deficits in June almost entirely prevented "blacknose" without causing the fruit either to drop or shrivel during ripening, with the one disadvantage being a slight reduction in final size.

"Whereas we are convinced that it would be unwise for a grower at the present time to attempt to prevent "blacknose" by allowing appreciable water deficits in palms to occur, we shall have to study the problem another year to learn more about the effect of water deficits upon loosening of the fruit."

SUBTROPICAL FRUIT INVESTIGATIONS

Roy W. Nixon, U.S.Date Garden, Indio, California.

"On November 11, the last picking of Deglet Noor dates was made in our study of the effect of leaf area and fruit thinning on yield and quality of fruit, begun this year in cooperation with the Coachella Valley Fruit Co. While the results can be finally interpreted only in relation to total grade yields over a period of years and the prices received, the grade records from the California Date Growers Association, who have graded all the fruit, from each plot, emphasize the importance of this study to the grower. There are six treatments -- 11, 9, 7 1/2 and 6 leaves per bunch with moderate fruit thinning (about 1/2 of the fruit removed from each bunch) and 7 1/2 and 6 leaves per bunch with heavy fruit thinning (about 2/3 of the fruit removed from each bunch). These treatments are believed to cover the present range of growers' practice. Previous data led us to expect results of the kind obtained this year, but we have been surprised at the magnitude of the differences in quality and in yield.

"Between 6 and 7.5 leaves per bunch grade differences were slight due to the fact that there was very little difference in yields. In order to get the lowest leaf-bunch ratio it was necessary to retain all the small late bunches which normally carry a reduced amount of fruit and this year had a very poor set. With the exception of the lowest leaf-bunch ratio the size of bunches between treatments was comparable. With moderate thinning the percentage of A and B-1 grades was 30.7 for 7.5 leaves per bunch and 50.7 for 11 leaves per bunch. However, this increase in grade was accompanied by a 29 percent reduction in yield. With heavy thinning and 7.5 leaves per bunch the percentage of A and B-1 grades was 53.2 and there was only a 5 percent reduction in yield! Correlated with increases in grade, were increases in size per fruit, as shown by both fresh and dry weights. While only a very preliminary study of these data has been made as yet, it appears that an increase in the number of bunches per palm and a decrease in the amount of fruit per bunch results in more carbohydrates per fruit and better quality of the fruit. Apparently restricted intake through the fruit stalk, as well as leaf area, may be limiting factors in fruit quality.

"Although heavy thinning is clearly indicated as the most profitable treatment for the grower on the basis of this year's results we are not yet willing to make this a general recommendation. In other season's we have seen excessive amounts of blacknose resulting from heavy thinning. Also, it is important to know whether there is a carry-over effect on either yield or grade of next year's crop. It has been shown in previous experiments that a large crop one year results in fewer inflorescences the following spring. In the MacIntosh plot the heaviest crop last year not only decreased the number of inflorescences this year but also the size of the inflorescences as indicated by the thickness of the fruit stalks."

DECIDUOUS FRUIT INVESTIGATIONS

Elmer Snyder, Fresno, Calif.

"A summary of American grape varieties grafted on rootstocks at the Oakville station indicates that most of the standard eastern varieties may be grown successfully under conditions comparable with Oakville if they are grafted on suitable rootstocks," he reports December 7. "Various American varieties and rootstocks have been under test in a block of vines at Oakville since 1912, representing a 28 year old grafted block. Weight records of fruit produced this season by such varieties as Concord, Isabella, Niagara, Catawba, Iona, and others indicate that a production of from 5 to 8 tons per acre is very possible when they are grafted on suitable stocks. The tests also indicate that some of the varieties that are considered less hardy under eastern conditions have possibilities under the milder conditions in California. Possibly one of the most significant facts is that approximately 100 varieties have been growing more or less satisfactorily grafted on various rootstocks over a period of 28 years. Some of those same varieties when growing on their own roots at the same station were considered too weak to be successfully grown. From root examination of such vines, phylloxera infestations and injury from the same appeared to be one of the main contributing factors to such weakness."

R. B. Allyn, Medford, Oreg. (Duty of water and soil moisture investigations)

"A new type of moisture absorption block for electrical conductivity measurements of soil moisture in situ has been developed which is considered an improvement over the Bouyoucos block, at least in so far as our soil conditions are concerned," he writes from the U.S. Pear Investigations Laboratory and Station on December 7th. "This new block is much more durable, more easily and satisfactorily placed, and appears to fit the available moisture range in our heavy soil very much better than the Bouyoucos block. We are making the new blocks from a material known as Albastone and they are easily placed by means of sample tube hole. We cannot say whether these blocks are subject to disconnection with the soil as drying progresses as apparently is the case with the Bouyoucos blocks under the conditions of our tests. A set of these blocks has been placed and they are being observed under winter soil moisture changes. An electrical resistance soil thermometer is being developed for use in conjunction with the blocks to correct the block resistance measurements for temperature changes.

"A type of earth resistivity measurement is being investigated with the hope of developing a device for indicating soil moisture conditions at various soil depths without the need for disturbing the soil in any way, by merely taking simple electrical measurements over the surface of the soil. A device for this measurement has been assembled here and preliminary trials show encouraging results. We have set up calibration area, and measurements with the instrument will be followed through the winter."

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"Peach trees at the University Farm show a killing of the terminal buds on most of the branches," he reports December 7th. "This injury is the result of a very sudden drop in temperature early in November. A grower at Lincoln, Ark. reports that a block of 1-year-old trees shows rather extensive killing of the branches. I have examined some Belle nursery stock from Hiwasse, Ark., and the outer cortical tissues are definitely discolored for a distance of 5 to 6 inches below the tips of the branches. At Rogers a nurseryman reports that between 500 and 600 June budded plum trees are killed to the ground line. The variety affected is not known but the information will be obtained during the coming week. These reports of the effect of the early freeze are the first received, but undoubtedly there will be further cases observed and we anticipate considerable interest in the problem next spring. In the meantime, we are planning to collect and section representative material to get some idea of the appearance of the injured tissues."

He had written November 23d: "The drop in temperature to 11°F. last week has caused considerable loss to farmers in the district. Much of the fall sowed grain, particularly the oats, has been killed, potatoes and turnips which had not been dug were frozen. The low temperatures put an end to the 1940 growing season and the section now has the typical mid-winter appearance with the trees either bare or with dead, brown leaves still clinging to the branches."

G. A. Meckstroth, Willard, N. C.

Writing from the Coastal Plain Station on December 15th, he says: "I have visited the Huntington blueberry farm and found 27 persons busily engaged at pruning. Some of the old stems have died during the past summer, due it is believed partly to drought and also to the effects of the canker disease. I found a number of stems with brown circular rings and brought some of these in for culturing. In some stems the wood next to a cankered area has turned brown, while the wood on the healthy side of branch looks perfectly normal. A lot of new canker infections were found on the current season's wood. I have been considering the Rancocas variety very resistant, but found a number of well developed cankers in the planting. This disease is very bad on the Concord variety; almost as bad as on Cabot."

He reported November 30th: "Blueberry pruning is in full swing at the Huntington farm, where they started about two weeks ago. At the Double Trouble Company, Magnolia, they started pruning November 25 on Rancocas variety only. The leaves have not dropped sufficiently on the other varieties at this time. As soon as we have a few more freezes followed by rain and wind the other varieties will be in condition for pruning. A good many Cabot buds at Crabbe's are partially opened and will probably be killed by frost."

DECIDUOUS FRUIT INVESTIGATIONS

M. A. Smith, Columbia, Mo.

"Alarming reports regarding the effects of the severe cold experienced during the 13th, 14th and 15th of November are being received in increasing numbers from the fruit growing districts of the State," he writes December 5th.

"From Columbia north and extending east to the Mississippi and west to the Missouri rivers, peaches, plums, cherries, strawberries and in some instances, apples, were apparently severely injured. Specimens received here indicate that the wood of peaches and plums has been severely injured and in some instances trees have been killed. It is, of course, too early to estimate injury to apples. In some localities certain varieties appeared little injured. In others, fruit buds and wood suffered.

"The suddenness and severity of the cold period coming at a time when hardening off had not occurred was undoubtedly the reason for the damage which according to the Department of Horticulture will probably prove to be the most severe ever experienced, at least in the northern half of the State. Reports from southern and southwest Missouri indicate that there has been some damage to peaches and strawberries, with apples showing less injury than in the northern part of the State."

John H. Weinberger, Fort Valley, Ga.

"Shalil peach seedlings from open-pollinated seed you sent us last spring were dug and the roots examined for nematode galls," he writes Dr. Cullinanx from the U. S. Horticultural Field Laboratory, on November 25th. "In a total of 79 seedlings not a single gall could be found. They had been planted in a young commercial orchard which was severely attacked by nematodes. A few of these seedlings will be transplanted to the nursery in central Georgia where I recently found second-generation Shalil seedlings susceptible to nemas, to see if they will continue to be resistant under those conditions.

"Part of the Tennessee Natural seedlings in the nema test block were dug last week. A few were found to be free of galls, but the indications were that they were free due to a scarcity of nematodes in that particular location rather than to inherent resistance. No resistant seedlings were found adjacent to a severely infested seedling. Those free of galls will be reset, of course, for further testing."

DECIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz, Hood River, Oreg.

Writing on general fruit conditions November 30th, he says: "The cull fruit piles scattered over the Valley indicate the poor packout experienced by growers this season. Only a very small percentage of the fruit was packed as extra fancy. Growers had the option in some cases to pack the lower grade as fancy or as U. S. No. 2. The latter grade was so unfamiliar to most growers that little advantage was taken of it as a whole. It is now evident that those growers using the No. 2 grade for Anjou pears were fortunate in their selection. The grade is well above the requirements necessary, but those growers trying to pack their fruit as fancy received a terrific set-back. The amount of russet present, due mainly to frost injury and blister mites, would easily make the U. S. grade but failed to be included with the fancy grade.

"Mr. Childs and I were called in by the Board of Directors of the Apple Growers Association to help formulate a decision on what to do with certain lots of pears. An examination of the fruit showed about 2 percent gray- and blue-mold rots in many lots. A chance was at hand to move about 50 cars of pears at $1.10 through Government purchases. Their problem was to know whether to move some of their better grades showing less rot but many punctures, or to take chances on holding for better price returns. It was surprising to us to note the large numbers of punctured fruit, a condition undoubtedly arising from the packing procedure. In some cases only about 3 or 4 pears of the larger sizes were free from punctures in a layer of fruit. While a few of these were showing rot, it was decided that probably only a few additional punctures would decay. Our recommendation was to move all the low grade fruit and lots known to hold poorly, making up the allotment total with the large sizes which are known to puncture more easily and bring a lower market price. Their remaining fruit will then be largely in the choicer sizes and of better quality where premium prices might offset a small loss taken at the present time. By this method at least, the chances for costly repacking operations would be minimized."

R. B. Wilcox, Pemberton, N. J.

"There was a meeting of blueberry growers on the 12th," he writes December 15th. "Among other things, the sales of fruit for the season were summarized. The total New Jersey crop sold through the Blueberry Cooperative Association was slightly more than 37,500 bushels. All fruit for the fresh fruit market was packed in 16-quart crates. The total figures, however, included 2,750 bushels sold in bulk for canning and freezing. This was the first year in which these two outlets played any important part in the blueberry market; this season they removed surplus fruit from the fresh fruit market during the peak, and prevented a glut that would undoubtedly have resulted in lower prices to growers. The crop was the largest that New Jersey has ever produced and the returns generally satisfactory."

NUT INVESTIGATIONS

B. G. Sitton, Shreveport, La.

"Most of the week was spent in attendance of the Oklahoma Pecan Growers' Association meetings at Okemah, Okla., and going to and returning from this meeting," he writes for the week ending December 7th. "I was very much interested in the pecan varieties that were exhibited in that they varied considerably in shape from the shape of similar varieties grown in this territory. The nuts were as a rule longer and not quite so large in diameter as similar nuts grown here. The shape of the Success nuts was the most striking of all. As grown in Louisiana the Success nuts are rather egg shaped, considerably larger at the basal end than at the apical end. Most of the specimens of Success pecans on exhibit at Okemah were almost uniform in diameter for the entire length. Other characteristics of the specimens, however, left no doubt in our minds that they were of the variety indicated."

He had written November 30th: "We have tentatively graded samples of pecans from the cultural plots in the J. Hill Fullilove orchard, by separation, by floating on water. These results are very interesting but are subject to revision after more accurate grading. The pecans from the bordeaux sprayed trees in the wide spaced plots were very much better filled than those from the unsprayed trees in this plot and still better than pecans from either bordeaux sprayed or unsprayed trees in the close spaced plots. The pecans from the unsprayed trees in the wide spaced plots were better than the pecans from the bordeaux sprayed trees in the close spaced plots. The pecans from the bordeaux sprayed trees in the close spaced plots were much better than those from the unsprayed trees in that plot."

C. E. Schuster, Corvallis, Oreg.

"In looking over the filbert orchards, it comes out very forcibly that there is undoubtedly the heaviest bloom this season that we have ever noted, coupled with a very early development of both the catkins and the female flowers," he writes December 7th. "Some pollen is already flying from some varieties, while we thought we saw some catkins on the Barcelona shedding pollen. The female flowers are protruding from the buds in large numbers. With the mild winter we have been having lately this development has been going on very rapidly.

"The short walnut crop and the ease with which they are disposing of the saleable quantity or that quantity outside of the so-called surplus is creating interest again in walnuts. It need not be surprising to find people planting walnuts not only on this account but with the feeling that in this section they can compete with any section on low prices and that a nut crop such as walnuts and filberts can be handled as well as any horticultural crop, and being non-perishable, is a very attractive proposition."

NUT INVESTIGATIONS

Atherton C. Gossard, Meridian, Miss.

"The trench layered pecan trees, and the air layers on pecan trees in the orchard were examined and photographed," he reports for the week ending November 23d. "Ten out of 12 trench layered stems of the Moore variety that were treated with indolebutyric acid picks had formed roots. Not all of these formed enough roots to cut them away from the parent tree for transplanting. No check stems formed any roots. Of 10 trench layered and treated tops of 2-year-old seedlings, all formed roots abundantly enough to be cut loose and transplanted.

"Eleven out of 12 air-layered Moore shoots, treated with indole-butyric acid toothpicks on July 7th were reported to have formed roots by August 16th. When examined on November 19th most of these roots had died. The reason for this is not definitely known, as the rooting medium was well moist when examined, and was watered religiously as long as the boxes were on the trees. As the boxed and rooted shoots were left on the trees for normal defoliation, which did not occur this year until after a freeze, it is possible that the roots were frozen. Further work on handling of the rooted shoots is evidently needed."

John R. Cole, Albany, Ga.

"In spite of the inclement weather a considerable quantity of nuts have been harvested to date," he writes November 30th from the U. S. Pecan Disease Field Laboratory. "Distributors estimate that the crop in Georgia will probably run as high as 14 million pounds, with at least 3 million of the total consisting of the Schley variety. I am quoting below a paragraph from a letter recently received--typical of the letters we receive from growers who are following our recommentations for the control of the scab disease:

> 'You may be interested to know that I followed your spray instructions on my Schleys this year and my yield will be at least ten times as great on these trees as on any recent year. I don't think scab hurt my trees anything to matter.'"

Arthur O. Alben, Shreveport, La.

"I have been securing harvest records in the Skannal and Fullilove orchards and have been working up harvest data during the week ending December 7th. In the Skannal orchard the yield per square foot of cross section area of tree trunk for the sulphate of ammonia, cyanamid, and 6-8-3 treatments are practically the same, but all are significantly higher than the no fertilizer plot."

NUT INVESTIGATIONS

Arthur O. Alben (continued)

"Yields in the Sentell orchard were very high this year," he reports for the week ending December 14th. "In our experimental block the yields per square foot of cross section area of tree trunk were as follows:

Check, no fertilizer	6-0-3	6-8-3	6-8-0	6-0-0 (cyanamid)
180 lbs.	203 lbs.	206 lbs.	214 lbs.	241 lbs.

"The trees were larger than one square foot of cross section area. They are planted 60 feet apart. On the basis of a perfect stand of trees the yield per acre for the various treatments were as follows:

Check, no fertilizer	6-8-3	6-8-0	6-0-3	6-0-0 (cyanamid)
2,615 lbs.	2,832 lbs.	3,125 lbs.	3,169 lbs.	3,467 lbs.

"Over a good share of the pecan growing territory the Stuart tree makes a very upright growth. In orchards that have occasional tremendous yields as the Sentell orchard has this year the Stuart tree loses much of its upright growing characteristics and becomes a much more spreading tree than is the case where high yields have not been obtained."

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

George P. Hoffman (Vegetable crop investigations)

"Together with Mr. Lutz, a visit was made the latter part of November to the Laurel sweetpotato starch plant for conferences with Manager Richee and Dr. Thurber. In spite of the lower yields generally over those of previous years, the plant is operating at capacity and operating methods have apparently been modified and refined to such an extent as to greatly reduce congestion in receiving and milling, and to increase the starch yield by approximately 3/4 to 1 pound per bushel of roots. Delayed harvest is being more generally accepted and practiced by growers and has, according to Manager Richee, a very worthwhile place in the growing and handling of sweetpotatoes being grown for industrial purposes."

In his report for the week ending December 14th, he makes a revealing comment regarding certain thoughtless persons:

"With Christmas 'just around the corner,' city dwellers are working hard on the beauty of the helpless trees and shrubs of the nearby forests. It might well be said that if Christmas came more often the beautiful holly and cedar of the unprotected forests would soon be things of the past."

ADMINISTRATIVE NOTES

Travel The means by which travel is performed should be shown in expense accounts. Of course, when transportation requests are cited, no statement is necessary. In other cases, however, it is impossible for the clerks handling accounts to determine whether the trip was made in Government-owned truck, Government-owned passenger-carrying car, State-owned car, or privately-owned car; or if the travel was at no expense to the Government. In all such cases it would be clear to all if the expense account contained some such statement as this: "Left _____ at ____ (time of departure) in Government-owned automobile (or truck) U.S.D.A. No. ___," or "in privately-owned automobile, license No. ___", etc. When traveling on a pass, the number should be given, together with the name of the issuing agency. The auditing of expense accounts will be expedited if this information is given in the account when first submitted.

Leave for Examinations "In order that there may be uniformity throughout the Department in the matter of granting leave to employees for the purpose of taking examinations," says a memorandum of November 27th from the Office of Personnel, "the following provisions which are being written into the Department Regulations are brought to your attention:

> "1. Employees taking non-competitive Civil Service examinations shall be granted time off without being charged any type of leave for the necessary time to complete the examination.
>
> "2. Employees taking Bureau or Department examinations for the purpose of determining their qualifications for their positions, or for promotion in the bureau or department shall be granted time off for such examinations without taking leave.
>
> "3. Employees taking any open competitive Civil Service examination will be required to take annual leave, or if annual leave is exhausted, leave without pay."

Mimeographing Correction! Apropos item on page 293 of the December 15, 1940 News Letter, Roy Gillette informs us that for our workers it is desirable that requests for mimeographing, etc. be prepared on our F. & V.C. & D. Form 1 (just as in ordering other things), with the preparation of the Duplicating Requisition Form--AD-72, left to our Supply Section.

Vol. 13 No. 1 January 1, 1941

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. XIII U. S. Horticultural Station, Beltsville, Md. No. 2
January 15, 1941

Almonds "Twenty years of skilled scientific work are behind the Jordanolo almond, now being introduced in California to compete with the Jordan almonds imported from the Malaga grape district in Spain for use in confectionery--particularly as sugar-coated nuts," says a Press Release of January 5th, discussing one of the new varieties described in Circular No. 542, "Two New Varieties of Almond: The Jordanolo and the Harpareil," by Milo N. Wood of this division. The Jordanolo and Harpareil were selected from a large number of trees that originated from crosses made between the Harriott and Nonpareil almonds.

"The University of California and the United States Department of Agriculture have cooperated in almond breeding--a succession of men from the University working with Milo N. Wood of the Department. After 20 years of work Wood feels they have been extra fortunate to get a new almond as good as Jordanolo so early in the breeding program."

"Work started in 1920 but included 3 preliminary years of assembling and studying stock before making the first cross. To get a 'Jordan' type almond for California the breeders did not try to improve the Jordan. Instead they crossed two California varieties, each with many good qualities, and out of a large group of seedlings found the Jordanolo and one other of high quality when the first trees fruited in 1927.

"Then came 12 years of orchard testing and tests of the nuts by confectioners--bearing, pollination, harvesting, shelling, blanching, dipping. The Jordanolo passed. It is not a perfect almond, but is desirable on most of the important points.

"Dealers estimate that the premium price market for which this particular almond was bred will want at least 2,000 tons of the nuts a year, and that any surplus would surpass the best varieties now sold for home use as edible nuts. Stock was released to the trade in 1939.

"Almonds are almost self-sterile and to set a good crop must be pollinated by other varieties. Bearing trees bloom over a rather long period and may need pollen from a succession of varieties. Wood says that another example of good luck with the Jordanolo is that it interpollinates successfully with two of the commercial varieties now grown in California, I.X.L. and Ne Plus Ultra."

In this connection, it is interesting to quote from a Press Release of December 29th concerning the versatility of the almond nut.

"The almond is not only one of the first trees that man selected from the wild and transplanted to his gardens and orchards; it is also one of the most versatile," it says. "New uses are still developing and as they do, the nut breeder is faced with the job of developing new varieties or improving old ones specially adapted to the new use.

"Some almonds are grown as ornamentals--for their flowers and without regard to fruit quality. There are bitter almonds and sweet almonds. Some of the uses listed by Mr. Milo N. Wood include medicinal preparations, cosmetics, perfumes, and soaps; in confectionery and for eating as nuts. Almonds are marketed in the shell, shelled as whole kernels, and divided into all sizes from broken kernels to almond flour.

"Almond products include the oil, the press-cake, meal, emulsion, and powder. Green almonds are regarded as a delicacy in some countries, and they are also pickled. Kernels are eaten raw, blanched and salted, roasted, toasted, sugared, and sometimes fried. Almond paste, almond confection, and almond butter are products from the grinding of the kernel and the extraction of more or less of the oil."

In connection with this almond breeding work, Mr. Wood and his associates have handled some 14,000 hybrid trees, the results of hand-made crosses. Many of these trees are still under test and their product has been or is being evaluated. Among them the Jordanolo, as stated, is outstanding in many ways. The tree grows vigorously, produces dense, thrifty foliage, yields heavily, and resists the attacks of mites (red spiders) to a remarkable extent. The nuts are easily and cheaply harvested and hulled. The shell is soft and the kernel content good. The kernels are free from doubles and are of desirable shape, resembling those of the Jordan almond in shape and size, blanch well, and have a tender texture. Mr. Wood reports that his correspondence indicates quite an interest in both the Jordanolo and the Harpareil, and it seems that quite an acreage will be planted to them this spring.

DECIDUOUS FRUIT INVESTIGATIONS

R. A. Lineberry, Raleigh, N. C.

Writing January 10th, he reports: "This week I applied the fertilizer to a new experiment in which three different levels of nitrogen were used from different sources with and without phosphorous and potash. There are 60 different treatments and the experiment is laid out in such a way that the data can be statistically analyzed. I plan to make foliar analyses in connection with soil, growth, and other data.

"Before the holidays I started an experiment in the greenhouse using a culture solution with sand. The strawberry plants are growing and blooming in some of the treatments. Some interesting symptoms appear to be developing. In treatments where calcium is left out the plants are small and are burning at the tip of the leaves. I expect to start some foliar analyses in the next two or three weeks that may explain some conditions now appearing."

J. R. Kienholz, Hood River, Oreg.

"The past month has been a mean one as far as health goes," he writes December 31st.

"A cold East wind started a 'flu' epidemic that attacked about 75 percent of the population. While medical experts claimed it was a mild form of the disease, it required at least four or five days before one felt like moving around. In most cases a persistent cough remained for nearly two weeks, or even longer. As a consequence, most of the working time has been spent inside, going over data, literature, etc. and planning spring work.

"More winter pruning has been done this year than has been noticed since I have been at this office. If severe freezing weather occurs much damage to pruning cuts, and possibly an increase in perennial canker are anticipated. Our minimum temperature so far has been around 15 above."

LIGHTS DELAY CHRYSANTHEMUM BLOOMS

At the American Society for Horticultural Science meetings in Philadelphia the end of December, S. L. Emsweller, Neil W. Stuart and J. Wise Byrnes of our Division told of delaying blossoming of chrysanthemums for nearly a month by turning on a strong light at midnight for 45 minutes. It is common practice for florists to hold back part of their crop of chrysanthemums for the late market by giving them artificially long days. This is done by use of lights for several hours each night for a month or more. The work reported on at Philadelphia is in a preliminary stage, but it points to a possible saving on electricity that would be important to florists.

NUT INVESTIGATIONS

Felix S. Lagassé, Gainesville, Fla.

"Work has just been completed on the determination of the oil content of tung fruits which had dropped from the trees and were collected at weekly intervals since September 20th," he reports December 14th. "They were stored until December 6th, at which time the oil content of mature fruits from this tree were considered as normal. The results show that the oil content of the kernels of this tree (74 percent on an absolute dry weight basis) increased until October 11th, but not thereafter.

"Another study along this line was also recently completed. Fifty fruits had been collected at each two week interval since August 23d. Twenty-five of them were analyzed immediately with respect to their oil content during the first week in December. The results indicate that the oil content of the immature fruits removed from the tree did not increase during the period of storage."

F. N. Dodge, Shreveport, La. (Robson)

"We completed the sale of this year's crop this week," he writes December 21st. "This year 29,157 pounds of pecans have been sold from this station, with a return of $2,099.30."

WILD STRAWBERRIES USED IN BREEDING

Wild strawberries collected in the Rocky Mountains may provide a new source of winter hardiness for use in breeding strawberries adapted in the central Great Plains and other sections of the country where the winters are too severe for present varieties. A preliminary report on strawberry breeding experiments at the Cheyenne Horticultural Station, Cheyenne, Wyo. by A. C. Hildreth and LeRoy Powers ("The Rocky Mountain Strawberry as a Source of Hardiness," before meetings of American Society for Horticultural Science, Philadelphia, Pa., December 30, 1940) described several crosses of native berries with the commercial varieties Gem, Dorsett, and Fairfax. Several of the hybrids have now fruited and some of them show promise for further breeding work.

"The central Great Plains and the high valleys and plateaus of the adjacent Rocky Mountain region are not favorable for growing strawberries," points out the summary of their paper, by the Division of Information. "Winters are cold, dry and windy, with little protection from snow cover. Many soils are alkaline and plants develop chlorosis, which further decreases their cold resistance. No commercial variety is reliably hardy in this region, Hildreth and Powers declare."

SUBTROPICAL FRUIT INVESTIGATIONS

Harold Yates, Fairhope, Ala.

"Final harvest of the 1940 crop of Satsuma oranges at the Gulf Coast Substation, Fairhope, Ala., has been completed," he reports under date of December 23d.

"The yield was low as was expected, being around 150 bushels as compared with 5,000 bushels from the same trees in 1939. This was due to the unusually low temperatures to which the trees were subjected in the winter of 1939-40. In January 1940 the temperature dropped on two different nights to 12°F. with minima below 20°F. on several other nights. This, the most severe winter experienced in around 40 years, resulted in complete defoliation, with some twig and branch injury, and with some trunk injury extending down to the top of the earth banks on trees heavily infested with purple scale.

"The yields in the Owari plots were quite variable, there being little if any correlation between the treatments received and the amount of fruit set. The trees within each variety produced fairly consistently, but there was considerable difference in the amount of fruit produced by the different varieties. A few trees produced as many as 200 fruits while others produced none. The fruit wasof poor quality and slow in maturing, due to light crop and the set of an unusually high percentage of late blooms.

"The varieties setting the most fruit were Satsuma FH 11424, Takagami Wase and Sato. The set of fruit on M Large Satsuma, Silverhill, Owari and Shitai Wase was very light.

"On November 16, 1940, the temperature at Fairhope dropped to 21°F. which was unusually low for that time of year. Some orchards in this vicinity were almost completely defoliated, while the orchard on the station suffered possibly a 20 percent leaf drop. If the remainder of this winter is not too severe the crop here should be good during the coming season."

NEW STRAWBERRIES

Circular 597, "The Maytime, Starbright, and Redstar Strawberries," by George M. Darrow, describes three hybrids made by George F. Waldo in 1931 and selected for propagation in 1933. The Maytime originated as a cross between Missionary and Fairfax; the Starbright and Redstar are both from Chesapeake-Fairfax crosses. In eastern Maryland, Maytime has been earlier and Redstar later than any standard variety now in the trade, when grown under the same conditions. Starbright is a handsome midseason variety of good quality. The three are being introduced by cooperating nurseries. The Department has no plants for distribution.

DECIDUOUS FRUIT INVESTIGATIONS

H. L. Lantz, Ames, Iowa

"I thought you might be interested in a statement relative to the seedling fruit situation which you reviewed here last summer," he writes Dr. Magness December 12th.

"As you will remember a considerable number of crossbred apple seedlings were well loaded with fruit. I have not taken time to check definitely as to the exact number of trees which fruited this year, but it must be well above two thousand. We brought a thousand or more samples into the storage, and we are going over these at the present time. Those trees which were bearing fruit that obviously was of little or no value we did not attempt to pick and store. We did, however, get a reading on all of these in the orchard, so we will have a good record as to their size, color, quality and season. A number of seedlings look very good and possess desirable size, color and quality. These we are planning to propagate for second test, if the trees prove to be hardy. Some of the most promising seedlings have come out of crosses which we have made on parents of known parentage.

"A situation has arisen which complicates our problem very materially, but, on the other hand, may be of considerable assistance in weeding out promising new seedlings which are not particularly hardy. During the week of November 11-15, temperatures hovered around the zero mark. For three days prior to the storm, upwards to two inches of rain fell. The trees were in full leaf and apparently full of sap. The preliminary surveys which we have made would indicate that the orchard industry of the Missouri Valley region, extending clear into Kansas and Missouri, will be partially, if not wholly, destroyed. The cambium and phloem areas of the bark on the trunks and larger limbs appear to be completely killed. The varieties Grimes, Golden Delicious, Winesap and Delicious, seem to have suffered the worst although we believe some orchards containing a high percentage of Jonathan trees will be a total loss. Even trees of Duchess and Wealthy which had produced a crop of fruit are apparently killed. Interestingly enough, it appears that those orchards which were topworked on Hibernal and Virginia Crab stocks stand an excellent chance of being saved.

"Two varieties which we have named and introduced show no injury whatever on the trunks and limbs. These varieties are Hawkeye Greening and Norwel. Secor and Edgewood are also in much better condition than Jonathan. Joan and Sharon show considerable injury. Regardless of variety, however, both the fruit and vegetable buds appear to be killed. It will be, therefore, very interesting to observe the survival of the trees among our crossbred apple seedlings.

DECIDUOUS FRUIT INVESTIGATIONS

H. L. Lantz (continued)

"Iowa horticulture has apparently suffered one of its greatest disasters in the history of this region. The records indicate that in 1865 an out of season freeze similar to the one just experienced occurred and did a great deal of damage to the orchards growing at that time. In 1925 we also had a similar experience but we found that there were enough cells alive in the cambium layer to rejuvenate most of the trees.

"Our growers do not seem to be discouraged to the point of quitting but are already planning to reestablish their orchards and their intention is, in many cases, to establish their orchards on hardy stocks. They are also asking for assistance in getting a start of such varieties as Edgewood, Secor, Sharon and Hawkeye Greening."

NEW SPRAY KILLS APPLE BLOSSOMS; CHANGES BEARING HABIT OF TREES

"A new way of attacking the old problem of biennial bearing of apple trees was suggested in a paper read December 30th before the American Association for the Advancement of Science in Philadelphia by J. R. Magness and L. P. Batjer," says a release sent to papers by the Bureau's Division of Information. Certain varieties of apples are known as biennial bearers because the trees produce a very heavy crop one year and almost none the next. Sometimes a late frost will kill all the fruit buds or blossoms over a wide area and start a cycle of alternate 'heavy' and 'light' years. This situation exists now over parts of the east. For the last 8 years the crop in odd numbered years has been consistently larger than in the even numbered years. Growers who have orchards that bear heavily in the odd years are naturally anxious to change the schedule so that the heavy crops come in the even years, when prices are better.

"In their paper Magness and Batjer report success in 'changing over' an orchard of York Imperial trees by the use of caustic sprays such as tar oil distillate and di-nitro-ortho-cyclo-hexyl-phenol, commonly referred to as DNO. The sprays were put on when the blossoms were in the early pink stage, killing the blossoms and thus preventing a set of fruit in 1939. A normal crop of fruit was set in 1940.

There are indications from this work that these sprays may be used also for killing only a part of the blossoms in the years of heavy production and thus promote a normal set of fruit every year, but more work will have to be done before this practice can be recommended to growers. Earlier work by Magness and others has demonstrated that the same end may be accomplished by thinning. Because of the very short time in which this thinning may be done, however, and the amount of hand labor necessary, this method is not always practical."

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"The continued rainy weather put an end to field work for the balance of the week and made it impossible to collect the specimens needed for the November low temperature injury investigations mentioned in last week's report," he writes December 14th, reporting rain over the week end. "However, specimens of Belle trees (June buds) were available and selections were prepared of the terminal growth. Twigs which showed no external signs of injury were found to have dead areas in the cortical tissues and the cambium. Twigs with definite external signs of injury were found to have the outer cortical tissue dead, the phloem discolored, and extensive killing of cells in the cambial region. In some cases the injury extended for a distance of 5 inches from the apex of the twigs."

John H. Weinberger, Fort Valley, Ga.

Writing from the U. S. Horticultural Field Laboratory on December 9th he says: "The block of Shalil peach stock in a commercial nursery, which I metnioned several weeks ago as being infested with nematodes, was dug on Saturday December 7th. Careful examination of 300 trees taken at random in the block showed only two whose roots were badly infested with nemas, and two others whose roots had a single gall on them. The infestation was not as severe as had been anticipated. Eleven open-pollinated Shalil seedlings, from seed obtsined from Beltsville, which had proved resistant to nemas in a test near Fort Valley this season, were then planted where the nursery trees had been dug. This will provide a comparison of the resistance of first-generation Shalil seedlings with second-generation seedlings. To make certain there was ample opportunity for infestation, a bunch of nema-infested Shalil roots was placed in the planting hole of each tree. The trees will be dug and examined next fall."

N. H. Loomis, Meridian, Miss.

Writing from the U. S. Horticultural Field Station on December 28th he reports:

"Strawberry growers are becoming alarmed at the amount of bloom in all plantings. Scattered early bloom is the usual thing but this year there is a heavy early bloom and there has even been a period without frosts sufficient for the development of half grown fruits. It is almost a certainty that these will be killed before they can mature. I feel that there is no need for alarm over the early bloom for with the Klondike variety there is certainly blossom bud formation when the weather is warm enough for growth, and this will insure a crop next spring. The Klondike is planted in southern Mississippi and Louisiana in the fall for spring production. Blossom buds are formed throughout the winter and we should have a similar condition here when it is warm enough for the buds to open."

ADMINISTRATIVE NOTES

W. W. Gilbert 1880 - 1940. The death of William W. Gilbert on December 22, 1940, struck close at home with the News Letter, since as head of the Division's editorial section he was our boss. Boss? Gentle, kindly Bill Gilbert never bossed any one in his life. He was our friend, the sympathetic and understanding friend of all his official associates. It is difficult to realize that we shall not see today, nor any other day, his cheerful greeting from the desk across the room. How perfectly the familiar lines of James Whitcomb Riley express our feelings:

"I cannot say, and I will not say
That he is dead--He is just away!
With a cheery smile, and a wave of the hand,
He wandered into an unknown land..."

Mr. Gilbert, a native of Vermont, came to us in 1904, from the University of Vermont. Most of his official life was spent as plant pathologist with the old Division of Cotton and Truck Crop Diseases of the Bureau of Plant Industry. Shortly after the creation of the Division of Fruit and Vegetable Crops and Diseases, Dr. Auchter felt the need of some one with sound scientific training and a broad background of Federal research experience to assist in the handling of manuscripts offered for publication--particularly the subject-matter review of such papers. A spirit of helpfulness and an infinite supply of tact was essential, the sensitiveness of authors about their brain children being what it is. It was a fine tribute to Mr. Gilbert's character and ability that he was selected for the position, which he has held since 1930, the last few years under trying conditions in a battle against failing health.

W. R. Beattie Retires When William R. Beattie retired December 31, 1940, the Department lost the services of its "youngest veteran." Considering Mr. Beattie's energy and enthusiasm in his threefold job in connection with our radio program, the handling of a vast bulk of general inquiries concerning vegetable growing, and his incidental research activities, it is not easy to understand that he has actually reached the retirement age. We remember our amazement some years ago in glancing through a bound volume of Farmers' Bulletins to find that FB 148, "Celery Culture," published in 1902, has W. R. listed as the author. We thought the publication date was a typographical error!

As a matter of fact, he joined the Department's horticultural work in 1899. In 1912 he resigned to become agricultural industrial commissioner of the St. Louis and Southwestern Railroad, but came back to us in 1918. In addition to his astonishing volume of official work, Mr. Beattie in some mysterious way conserved enough energy for citizens' association activities outside official hours to win the Evening Star newspaper trophy in 1939 for outstanding civic work in Prince George County, Maryland.

ADMINISTRATIVE NOTES

Taxicab In the News Letter for October 1 we called attention to a memorandum issued primarily for employees residing in Washington, D. C. and nearby points, but of some interest to our other workers, especially those who visit Washington or Beltsville from time to time.

The subject of the memorandum was taxicab fares in the District of Columbia, the General Accounting Office having limited charges from Union Station, Washington, D. C., to employee's resident in a suburb of Washington to the maximum District of Columbia zone rate--80 cents. The ruling was discussed with the Bureau of Plant Industry Office of Accounts in its relation to employees headquartered at Beltsville, Md. The understanding at present is that employees living in the vicinity of Beltsville may be reimbursed for transportation charges from their homes to Union Station in connection with official trips, when it is necessary for them to take a train at that point. Employees who have their residence in other sections, such as Takoma Park, Chevy Chase, Arlington, etc. will be reimbursed for transportation from residence to Union Station not to exceed 80 cents when a taxicab is used.

The Comptroller General's office points out in a recent decision that as a practical matter an employee may be permitted to start his official trip from his home when it is unnecessary for him first to report to his office, but there is no intention manifested by the regulations to reimburse him for the excess cost of transportation from his home located outside the corporate limits of his official station for the distance traveled outside such limits. Thus an employee of the Maritime Commission whose official headquarters are in Washington, D. C., paid $1.25 for taxicab from his home in Arlington, Va. to Union Station, Washington, D.C. and the auditors suspended the difference between $1.25 and the 80 cents established as maximum taxicab fare in Washington, D.C.

PERSONNEL CHANGES

Miss Pearle R. Smith, who had charge of letters of authorization, retires on disability effective January 31, 1941, and is now on leave until that date. Miss Smith has been in the Federal service more than 33 years, all but one year with the Bureau of Plant Industry.

Miss Verda H. Moody, section of supplies, died January 5th after an illness of several months. Miss Moody came to us from the War Department in 1930.

Herbert H. Fisher, William F. Kosar, and Robert W. Linehan, members of the National Guard, have won commissions as lieutenants and resigned to enter the military service. Wade Thomas, drafted, also reported for military training early in January.

MONTHLY AUTOMOBILE REPORTS

Standard Form AD-186 was devised for use of the entire Department for keeping a record of the cost of operation and repairs for passenger-carrying automobiles and for trucks when 75 percent of their use is for travel away from headquarters. The form, therefore, should be submitted in accordance with the instructions thereon. Only a very limited number of these forms have been furnished us so they should be handled carefully. When your supply is exhausted a new order may be placed with our Supply Section.

The regulations provide that one-third of the cost of a passenger-carrying car may be spent for repairs during a fiscal year. The f.o.b. shipping point price together with any trade-in allowance on an old car is considered the actual cost of the automobile, the maximum for which is $750.00 in our Division. Repairs for such a car, therefore, cannot exceed $250.00 in any fiscal year. There is no limitation on repairs to trucks. Standard Form AD-186 has a column for entering the speedometer readings. These readings should be entered each time an expense is incurred. Storage is not considered as a repair but as an operation expense, so need not be deducted from the maximum allowed for up-keep and repair. This applies also to all those items listed in the column "The cost excluded from statutory limitations." Labor performed in repair work by government employees in the shop of a federal agency is a repair charge and the amount involved should be shown on the monthly report. Vouchers covering such items as are listed on form AD-186 under "Cost included in Statutory Limitation" among which are washing, polishing and waxing must bear the following certification:

> "I certify that expenses incurred from the beginning of the current fiscal year to the close of the period covered by the attached voucher as submitted, for maintenance, upkeep and repair of the Government-owned vehicles identified herein, which are used exclusively for official purposes, have been (for any one vehicle herein concerned) not more than one-third of the market price of a new vehicle and in no case in excess of $400.00."

Any purchases of heaters, mirrors, extra windshield wipers, visors, bumperettes, spotlights, defrosters, seat covers, etc. are to be added to the cost of the car. Skid chains are not considered for this purpose. The combined original cost and such additional equipment shall not exceed the statutory maximum of $750.00. Replacement or repair of such equipment, however, is a maintenance cost. Vouchers covering initial purchase of such items as the foregoing should carry a summary such as: Original cost of automobile (License Number_____); accessories purchased; and cost of automobile to date. This information could be typed on the face of the voucher if space permits; or may be shown on the reverse of the voucher if necessary.

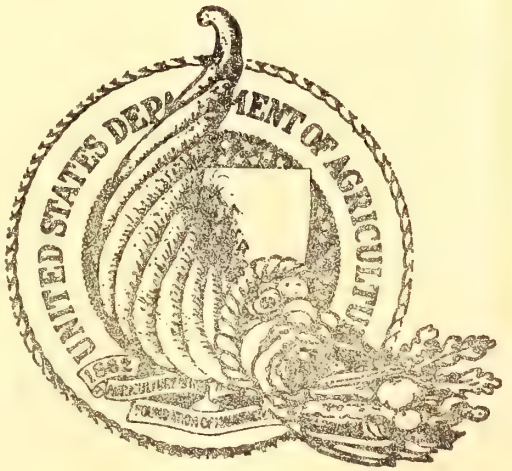
Where voucher form 1080 is used transferring funds from one agency to another for passenger car repairs, the certificate as to expenses incurred from the beginning of the current fiscal year is required.

Vol. 13 No. 2 January 15, 1941

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. XIII U. S. Horticultural Station, Beltsville, Md. No. 3
February 1, 1941

Sweetpotatoes and Research. "The farmer and consumer are demanding agricultural research not because they doubt the country's ability to produce food enough, but because waste should be cut down and quality improved as much as possible," said Dr. Victor R. Boswell in a talk before the Kansas Horticultural Society in December, in which he discussed the possibilities for improving profits on sweetpotatoes through increased yields and higher quality.

Because the sweetpotato is easy to grow, after a fashion, there is an inclination to become careless and unmindful of what it takes to make it perform up to the limit of its capacity, he declared. And yields must be high and production efficient if the grower is to make a living. Average sweetpotato yields and prices received have not been going up for many years. In fact, they are shockingly low and profit is out of the question for many growers. With increasing costs of labor, machinery and living, it takes more bushels of sweetpotatoes per acre to pay the bills.

What can be done about it? What are the possibilities for improvement? Dr. Boswell believes a good deal can be done right now; and the research program will help still more. First of all, the grower should concentrate on a variety for which there is a good demand, resulting in a profitable return and a good volume of sales. For example, there is an increasing demand and appreciation on northern markets of the Porto Rico variety. There is also an increasing demand for deep orange or salmon-fleshed sweetpotatoes over the pale-fleshed sorts. This is no doubt desirable because the deep orange color is due to carotene, which is closely related to vitamin A.

The grower should be progressive enough to appreciate that there is a chance that he may do better with other varieties than those he has been growing, and so be willing to try out new sorts. He should keep in close touch with his experiment station and extension service and try out some of the new varieties they are offering, helping them in their tests of new sweetpotatoes. The final decision as to the acceptability of a new variety rests largely with the growers who try it out over a wide range of conditions.

Gratifying progress is being made in sweetpotato breeding, and the bottleneck in variety improvement now appears to have been eliminated once and for all through the cooperative breeding program that includes the United States Department of Agriculture and State or territorial experiment stations in Virginia, South Carolina, Georgia, Mississippi, Louisiana, Texas, Iowa, Puerto Rico and Hawaii. This cooperative breeding and selection program has four comprehensive objectives:

(1) Immunity or high resistance to diseases, especially to stem rot and soil rot or pox that cannot be controlled in any other way. Once obtained, resistance can be combined with other desired characters.

(2) Better market varieties, having high yield, attractive shape and color, high carotene and solids content, long keeping quality, disease resistance, capacity to produce plenty of sprouts, and wide adaptability.

(3) Better varieties for starch manufacture in the South, with emphasis on higher starch content, higher yield, disease resistance, tolerance to cold, wet soil after frost, and higher sprout producing capacity. For starch manufacture, of course, appearance is not important, but the variety should be easy to harvest.

(4) Better varieties for stock feed, producing higher tonnages of roots and having higher solids and good keeping quality.

(News Letter readers will recall that Jake Lutz wrote us pathetically from the U. S. Horticultural Station at Meridian, Miss., wanting to know if where a farmer grew sweetpotatoes for human consumption and could not sell them because of price, cold injury or some other reason, and used them for stock feed, those sweetpotatoes could still be regarded as a horticultural crop. The new breeding program will solve that problem to Jake's satisfaction by retaining the sweetpotato in the list of horticultural crops while adapting it for use as forage!)

Sweetpotatoes should be handled with gloves, literally, according to Dr. Boswell, as they are easily skinned and bruised, and the major causes of loss in the crop after harvesting result from careless, or too much, handling.

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS

C. O. Bratley, New York, N. Y.

"Mr. F. H. Vahlsing, one of the largest shippers of fresh produce in the United States, has recently purchased the S/S HAMPTON ROADS and fitted this small steamship with forced draft ventilation for the purpose of transporting fresh produce from Texas," he writes January 8th.

"The ventilating system consists of two ducts about 12 inches in diameter leading into the lower hold from blowers, one on the after deck and one on the forward deck of the ship. These electrically operated blowers force fresh air into the lowest part of the cargo, from which it filters up and out through the hatch covers. In October 60,000 bags of potatoes were loaded at Searsport, Me., and were discharged at the ports of Jacksonville, Miami, New Orleans and Houston. The potato cargo was reported to have kept in fine condition.

"For the return voyage a cargo of 23,000 boxes of grapefruit and 4,000 crates of vegetables consisting of peppers, summer squash, and eggplant were loaded at Brownsville, Tex. We observed some of this cargo as it was being discharged at New York City on November 25th. Temperatures taken in several boxes of grapefruit ranged between 60° and 70°F. whereas the outside air temperature was about 40°F.

"Some of the boxes that were said to have been stowed near the boiler room contained up to 10 percent stem end rot. The lot as a whole contained about 2 percent of this decay. The fruit was slightly soft but otherwise had a bright appearance. It was held on the pier and marketed over a period of several weeks, during which time many of the boxes were reconditioned.

"Peppers were badly decayed, with bacterial soft rot and rhizopus rot affecting from 10 to 75 percent in most of the crates. Calyces of all the eggplants were dark and moldy, and about 15 percent of the fruit was affected with rhizopus rot. The summer squash contained about 10 percent decay, mostly rhizopus rot.

"Since the ship was not chartered as a public carrier, all of the cargo belonged to Mr. Vahlsing who undoubtedly suffered a several thousand dollar loss. Another shipment of fruit and vegetables was planned but so far its arrival has not been made public. This shipment corroborated the belief generally held among the trade that fresh vegetables cannot be shipped from Texas to New York under ventilation. Moreover it is doubted if grapefruit can be satisfactorily handled even during the coldest months of the winter without more adequate ventilation of the cargo space in the ship."

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"Tomorrow marks the middle of the winter season," he writes Dr. Cullinan on January 8th. "According to 20 years' records on hours of cold, half of the hours accumulated before January 9th, and half after that date, so soon we will be on the sunny side of winter.

"Thanks to the present cold snap, this season will be only 40 hours or so below the normal in passing the median. Earlier in the week growers were becoming anxious about the continued warm weather, and we received a number of telephone calls inquiring about the situation. There is no sign of activity in peach buds as yet except on the Peen-to variety."

Writing December 23d he reported: "Seventy-five hours were added last week to the season's total of hours of cold, which is now 394, just three hours short of normal. Warm weather next month would bring the Hiley variety into bloom slowly, as a warm January did in 1937. No such condition is anticipated or desired.

"Trees of the Early Rose, Elberta, and Hiley varieties both at the laboratory and in a nearby commercial orchard were sprayed last week with various concentrations of DNO, in the earliest attempt to force the buds out of dormancy. Early in January a program of dormancy-breaking sprays will be initiated at Albany and Musella, as well as at Fort Valley. A wettable form of DNO powder is being used, which greatly simplifies the mixing of the sprays. The chemical may be added directly to the spray tank, using any commercial oil emulsion."

R. B. Wilcox, Pemberton, N. J.

"The annual meeting of the Blueberry Cooperative Association was held at Pemberton on January 10th," he writes from the Blueberry and Cranberry Disease Laboratory on January 15th.

"Some of the reports had been given in brief form at a previous meeting, including the fact that the 1940 crop of the Association has been above 37,500 bushels, of which about 85 percent had been sold on the fresh fruit market in 16-pint crates, and the balance in bulk for canning and freezing.

"A feature of the luncheon served to members was the pie made from commercially canned blueberries; the syrup, or juice, from the cans was used to make a very palatable cocktail."

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"January 6th I visited, with Prof. J. R. Cooper of the Horticultural Department, an 8-year-old peach orchard near Bentonville. We found that 4 rows, planted to Arkansas Black, an early maturing peach, showed very definite crotch and trunk injury as the result of low temperature in November 1940. The cortical tissues are discolored and there is some killing of the cambium but the xylem is not discolored. Adjacent rows of Red Bird and Elberta trees showed very little injury. Similar injury was found in another orchard on Mayflower and Elberta. These trees, however, have been neglected for a number of years. Commercial peach orchards of Elberta ranging from 1 to 6 years old were examined in the Springdale region. Only an occasional tree showed signs of injury.

"A letter from W. G. Amstein, Extension Specialist in Horticulture, Kansas Experiment Station, reports widespread winter injury to peaches and sour cherries in the Arkansas River, Kaw River, and Northeast Kansas fruit section," he wrote January 4th. "The fruit buds and young branches of the peach trees appear to be in fair condition but there is evidence to extensive injury on the trunks near the ground line. Injury to apples seems extremely variable but Wealthy, Oldenburg, and Yellow Transparent seem to have suffered the least, while Maiden Blush and York Imperial appear to be most severely injured. The injury is most aggravated on the north side of the trees and the trees from 5 to 15 years old seem to have suffered more than older trees."

ADMINISTRATIVE NOTES

Bills of Lading Routing, etc. In issuing Government bills of lading for express shipments or for freight shipments in less than carload lots, it is not necessary to show detailed routings. Only the name of the initial carrier need be shown in the space provided therefor on the bill of lading, followed by the notation: "Forward via lowest reasonable available route." However, for carload rail shipments and combination rail-water or all-water shipments, specific routings must be obtained through the Business Office.

Travel Expenses Special Conveyances When an official traveler claims reimbursement in his expense account for the hire of a special conveyance, the Comptroller has ruled (Decision B-13635, January 3, 1941) that the charge must be supported by the following statement: "The persons from whom the automobiles were hired were not Government employees, members of the family of a Government employee, or members of my family." The statement, of course, should be modified to fit the type of special transportation used!

THE ANNUAL REPORT OF THE CHIEF OF BUREAU

"Work that does good to others, besides providing a living for oneself, is an enviable kind of employment in this world of misdirected, pernicious, and frequently murderous activity," declared former Secretary Wallace in one of his papers. "That is the kind of work the Department's people do..."

Concrete evidence of the truth of this is to be found in Dr. Auchter's report for the fiscal year ended June 30, 1940, just issued. While he was able, in his limited space, to touch but lightly on the work of the individual division, enough is said to make us rather proud to be connected with the fruit and vegetable investigations.

The primary objective of the Bureau's work, says Dr. Auchter, is to provide knowledge for farmers to use in their everyday job of making a living, but in a broader sense the objective is to utilize science to assure the Nation of a stable supply of food and fiber and to maintain our soil resources.

"The broad and fundamental character of much of this research makes the results adaptable to varying conditions and purposes," he points out. "If economic conditions call for adjustment of production or of land use, the store of information accumulated through years of research provides a sound basis for a modified agronomy. In shifting the emphasis from surplus soil-depleting crops to soil-improving crops, the fruits of the Bureau's research come into play. And if the needs of the Nation should again call for stimulating agricultural production for food and industrial purposes, again the accumulated knowledge would make possible tremendous expansion. Whether in normal times or in periods of stress, the steady march of plant and soil research is a source of national strength.

"In general, the Bureau's investigations include (1) plant breeding and the introduction of useful new plants, with a view to improving quality, developing disease resistance, and adapting crops to climatic, soil, and economic conditions; (2) the study of plant diseases as a basis for their control; (3) improvement of cultural and handling methods, to lessen cost of production and ssure better products for the consumer and better returns for the producer; and (4) the study of fertilizers and soils, including the systematic surveying and mapping of the soils of the country as an aid to better utilization. Although certain long-range projects go on year after year, the research program is readily shifted to meet new or special problems as they arise. The cooperative relations of the Bureau with the State and territorial agricultural experiment stations provide a coordinated network of research agencies covering every section of the country and its possessions, every important soil type, and every crop grown commercially."

The brief paragraphs touching on the highlights of Bureau work during the year are so effective in presenting the worthwhile results of the research activities that we believe it will be interesting--and very instructive--to quote a score of those bearing on the work of the Division of Fruit and Vegetable Crops and Diseases.

NITROGEN NUTRITION INFLUENCES APPLE FRUIT COLOR

"It has been found that reduction in color of apple fruits is definitely associated with relatively high nitrogen content of the leaves at harvest time. For best color and finish, nitrogen should be in the tree at the time rapid spring growth occurs, and there should be a relatively low level of nitrogen content through the latter part of the growing season.

"With this basic information it will be possible to work out the timing of fertilizer applications so as to bring about low nitrogen in late summer without interfering with satisfactory growth and productiveness in the tree. Experimental results have indicated that nitrogen nutrient materials will enter apple roots while the tops of the trees are still dormant and the root temperature is as low as 40°F."

GROWTH-CONTROL SUBSTANCES RETARD APPLE DROP

"A very dilute solution of several plant-growth substances sprayed on apple trees and fruit just prior to normal harvestime will delay dropping of fruit. Of a number of compounds tested, naphthaleneacetic acid and naphthaleneacetamide were most effective. Losses from early dropping were lessened, and the color and size of certain varieties were greatly improved when the fruit remained longer on the trees."

DETERIORATION OF APPLES RETARDED BY CARBON DIOXIDE

"Experiments on several varieties of apples to determine the effect of treatment with carbon dioxide upon the later rate of ripening indicate that exposure to atmospheres with 35 to 40 percent of carbon dioxide for 2 days at 50° to 55°F. delayed the rate of softening more than holding the fruit at 32° for an equal time. Other experiments have shown that certain types of decay are retarded by carbon dioxide treatments."

FIVE NEW PEACH VARIETIES INTRODUCED

"Five new peach varieties have been named and released for propagation by nurserymen, as a result of cooperative breeding work. Dixigold is an early yellow freestone peach adapted for growing in the extreme south peach belt. The remaining four introductions were developed in California. Leeton and Maxine are early yellow-fleshed freestone varieties, Stanford is a relatively late canning cling, and Ellis is a midseason canning cling."

PROTECTION OF PEACH SEEDLINGS FROM CROWN GALL

"Dipping peach pits in a suspension of calomel before planting gives a high degree of protection against crown gall infection on the main root axis, where the majority of galls are found in nature. The crown gall organism enters through slight wounds produced in the seedlings by contact with the sharp pit point during germination. Moderate soil acidity greatly reduces later crown gall infection on peach trees growing in the nursery."

SAVINGS FOR FLORIDA CITRUS GROWERS

"In investigations on the transportation of Florida oranges it was found that the use of upper-half-bunker icing, as previously developed in similar investigations on the transcontinental shipment of California oranges, gave cheaper and more effective refrigeration of the load. It was also shown that thoroughly precooled citrus fruit can be moved to northern markets in satisfactory condition without transit refrigeration if loaded in well-insulated cars in which the vents are kept closed."

NEW MATURITY CRITERION FOR HIGHLY COLORED APPLES

"A new criterion for maturity of new red strains of the Delicious variety of apple has been developed and given practical application in the Northwest. It is based on the time elapsed after full bloom. As a result of investigations in this Bureau, the State-Federal inspection service will not certify these strains as properly mature unless they are harvested at least 142 days after full bloom. This requirement should insure improved eating quality in these varieties as they reach the consumer, since formerly they were picked largely on the basis of color, and the red strains become fully colored long before they are properly matured for harvesting."

SMALL FRUITS

"The strawberry variety Aberdeen and four other selections imported from Scotland have proved to be resistant to the red stele root disease, to which all of the American standard varieties are susceptible. The discovery of this resistance gives a basis for breeding to introduce this character into standard American types. The first generation of hybrids shows about 50 percent of the seedlings resistant to red stele disease.

"During the year one raspberry and two trailing blackberry varieties were named and introduced in the nursery trade. The Sunrise raspberry is hardy, disease-resistant, and very early in ripening; it seems to be well adapted for growing in southern raspberry regions. It is a cross of Latham with Ranere. The blackberries have been named Pacific and Cascade. They are crosses of Zielinski with Logan. Both have the fine flavor of the wild, are very productive, and are suitable for canning and for freezing."

FILBERT BACTERIAL BLIGHT CONTROLLED BY SPRAYING

"Investigations on the control of bacterial blight of filbert have shown that one application of 8-4-100 bordeaux mixture in late summer before the occurrence of the first fall rains gives almost as good results as the full schedule, which includes a second application in late fall and a third one in early spring. The number of infection sources in nursery stock can be practically eliminated by excision and timely spraying."

IMPROVEMENTS IN HANDLING TOMATO PLANTS FOR SHIPMENT

"Leaf spot and stem canker infection of young tomato plants has been found to vary directly with (1) degree of plant wilting before packing, (2) age of plant, (3) degree of plant 'starvation' or adverse nutritional condition, (4) time the plants are in storage or transit and (5) degree of mechanical injury to the plants. These preliminary findings offer some basis for improvement in production and handling methods for tomato plants grown in the South for shipment northward. It was also found that certain copper sprays are superior to bordeaux mixture for use on the seedlings. A storage atmosphere having 15 percent of carbon dioxide and 10 percent of oxygen maintains the plants in good condition at ordinary temperatures and greatly reduces the incidence of stem canker. Dipping the roots in 1 percent potassium permanganate solution prevents a considerable amount of stem canker development. Vitamin B_1 and 3-indoleacetic acid applied to the roots just before planting stimulate subsequent development of roots."

IMPROVEMENT IN TWO WILT-RESISTANT TOMATO VARIETIES

"Since their introduction a few years ago, the Riverside and Essar tomato varieties have been improved by further selection. A strain of Essar that is uniform, has bright color, smooth surface, meaty texture, and good flavor, and is highly resistant to verticillium wilt has been released to seedsmen for increase. Two improved strains of Riverside possess increased earliness and resistance to verticillium wilt."

POTATOES

A new potato variety has been introduced under the name Sequoia. It is the result of cooperative breeding work with the North Carolina Agricultural Experiment Station and has proved to be well adapted for growing at high altitudes in western parts of North Carolina and of Maryland. It is tolerant of leafhoppers and flea beetles and is somewhat resistant to late blight.

A newly recognized bacterial disease of potatoes known as ring rot has been found to be serious in a number of potato-producing regions and has caused growers much concern. Arrangements have been made with a number of State agricultural experiment stations for cooperative investigations of this disease. The most satisfactory control would result from

finding or developing suitable resistant or immune potato varieties. Tests are being made in the greenhouse and in the field to find out whether any of the breeding material now on hand carries high resistance to ring rot. One foreign introduction, Arran Consul, is reputed to be resistant, and crosses are being made with it as a parent."

EARLY WILT-RESISTANT CABBAGE DEVELOPED

In cooperation with the Wisconsin Agricultural Experiment Station, a very promising new strain of yellows-resistant early cabbage of the Golden Acre type is being released under the name Wisconsin Golden Acre. Intensive selection has been continued for further improvement of the three yellows-resistant varieties All Head Select, Wisconsin All Seasons, and Wisconsin Hollander.

IMPROVED TYPES OF EASTER LILIES RESULT FROM BREEDING

"A number of highly improved types of Easter lilies have been obtained by hybridizing. Some of these hybrids are superior to types now available, and the blossoms have commanded a premium on the New York flower market. They are being propagated for introduction in the trade. Bulb-production investigations have been undertaken in the Southern States with the object of increasing the domestic supply of Easter lily bulbs for forcing. It has been demonstrated that American-grown Easter lily bulbs when produced in the Southern States can be brought into bloom by Thanksgiving Day from the current season's crop. Easter lilies are in great demand during November and December, and the only source of supply is from Japanese bulbs that have been held in storage from 6 to 8 months. American-grown bulbs produce more flowers and require only 5 weeks of storage to make the Thanksgiving market."

DOUBLE-FLOWERED STOCK PLANTS

"During the last year a cooperative demonstration with the Society of American Florists revealed that is is possible to select young stock seedlings that will produce double flowers in 90 percent of the cases. Plants of the flowering stock bear either double or single flowers. The market pays from four to five times more for double than for single flowers. Florists, in general, have not been able to obtain more than 50 percent of double ones, and often the proportion is as low as 30 percent."

GAS FROM STORED FRUIT MAKES FLOWERS SLEEPY

"The common practice of placing cut flowers in cold-storage rooms where apples and other fruit are stored is indirectly responsible for premature deterioration of the flowers, recent work has shown. Fruits in storage give off ethylene. Flowers exposed to ethylene from other sources react the same as those stored with fruit. Cut flowers were stored at 70°, 50°, and 36°F. with and without fruit and also in the presence of ethylene. The higher the temperature the more pronounced was the damage to the flowers when fruit or ethylene was present."

COOPERATIVE SWEETPOTATO INVESTIGATIONS BEGUN

"Cooperative arrangements have been made with six State agricultural experiment stations and detailed plans have been drawn up for an extensive program of sweetpotato production and breeding investigations. Work is well started on six major sweetpotato problems. A large number of new introductions, selections, and seedling varieties are being tested for adaptability and cultural requirements in various sections. Propagation, production, harvesting, and disease-control methods are being studied."

(The first article in this issue of the News Letter gives additional details in connection with this sweetpotato work.)

GROWTH SUBSTANCES BENEFICIAL IN TRANSPLANTING PECAN TREES

"Very satisfactory results have followed root treatments of pecan trees during transplanting with indole-3-butric acid, one of the growth-promoting chemicals. Small holes just large enough for a round toothpick are bored in the taproots of the transplants. The toothpicks are dipped in a solution of the chemical and used to plug up the holes. Considerably larger amounts of new roots were formed on the treated trees as compared with untreated checks, but there was no significant increase in top growth during the first year. The difficulty of getting pecan transplants quickly reestablished so they live and make average new growth during the first year or two after transplanting has been a serious problem which the present experiments give promose of solving."

PRUNING PRACTICES FOR VINIFERA GRAPES

"In pruning vinifera grape varieties grown on vigorous rootstocks it was found that leaving extra canes and training the growth to receive a maximum of light and aeration resulted in turning vigor into fruit production during the current season and improved the type and maturity of fruiting wood the following season. Zinc sulfate solution applied to pruning wounds of Alexandria (Muscat of Alexandria) and Alphonse Lavalle (Ribier) varieties made early in January, early February, or early March resulted in increase of fruit setting and fruit yield over nontreated vines. Slight injury to buds from the January application did not affect production."

PUBLICATIONS

Well and good, but no research job is actually completed until the findings are made available to those who need them. Let's look at the record on that score: Bureau of Plant Industry workers contributed 128 publications (110 new and 18 revised) to Department series during the fiscal year covered by the report; and had 580 papers published in outside journals. A rough check shows members of our Division contributed 33 of the publications in the Department's series, and about 200 of those in outside journals; but the list is actually even more impressive for, including emergency 'briefs', informal talks to growers, etc., 325 papers by our employees were approved for outside publication during the year! We also prepared copy for revisions of 12 Department publications.

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. XIII U. S. Horticultural Station, Beltsville, Md. No. 4
February 15, 1941

Strawberries--and superlatives! An Irishman who had married rather late in life had a habit of introducing his new wife with the remark: "For more than 40 years, I searched for perfection, and then--" he would pause impressively and indicate his bride. "And then I found something better!" That's the way it seems to be with Dr. George M. Darrow and his associates in the small fruit investigations. They reached and passed perfection in their products long ago.

You need not take our word for it. Here is a catalogue from a Maryland nursery concern that specializes in strawberries, for example. On its cover is a picture in colors of a box of our new Fairfax strawberries. That picture belongs in the National Gallery of Art! Of course it hasn't the mystery of the "Mona Lisa," and it lacks something of the heart appeal of Whistler's "Mother," but just name us one picture in the National Gallery that will make your mouth water! This Fairfax cover will do that.

And the quality of the new berry matches its superlative beauty. "Enthusiasm for the Fairfax is greater than for any other variety we have ever known," say these nurserymen. "It begins because the berries are so good--the best to eat of all strawberries. The enthusiasm continues and grows because the highest quality is backed by so many other fine things...Fairfax has a delicious flavor that can be had in no other berries."

The Fairfax and the other superlative new strawberry varieties we are introducing are no accidents--we have fruited out more than a quarter of million seedlings to get them.

The pride of the group still remains the Blakemore, which has gone on to become the leading strawberry variety of the country, but its brothers and sister indicate that it is going to be a real battle for Blakemore to hold top position. Right now it reigns supreme, a recent survey by the American Fruit Grower showing that it stood first in favor among the growers. As the Atlanta Journal puts it, "The Blakemore covers Dixie like the dew," and besides being the best early shipping berry the Southern States have ever had, the variety does well as far north as Maryland, Southern New Jersey and the Ohio Valley.

Then there is the Dorsett. Our nursery friends say of this new strawberry: "The fruits are larger, firmer and far better in quality than those of the Premier; in fact Dorsett is the most delicious of all berries except Fairfax, and some think it even equals Fairfax. Our records show that Dorsett has been the most profitable early berry we have ever had." The most profitable--those are magic words to fall on a strawberry grower's ears!

In another new strawberry, the Fairmore, we appear to have a variety that comes close to being the first high quality shipping berry the South has had--first in ability to stand shipment, that is. Its firm flesh and tough skin make it better for that purpose than either of its parents--the Fairfax and Blakemore. Fairfax and Fairmore sold for more per quart in 1940 than any other berries shipped from North Carolina, the only point at which the Fairmore is as yet produced in quantity. Market reports show these two at the top throughout the season.

Too, there is the intensely interesting point of vitamin content. In tests of seven strawberry varieties for Vitamin C, made at the North Carolina State College, the Fairmore ranked easily first and actually averaged 79 percent more Vitamin C than the Missionary strawberry grown under identical conditions. From 20 to 30 Fairmore strawberries would meet the daily human requirements for Vitamin C, according to Professor Satterfield, who made the tests. A 4-ounce serving of practically any strawberry variety will contain about as much Vitamin C as a glass of orange juice. The importance of this vitamin may play a leading part in increasing the popularity of the Fairmore.

An active competitor of the Fairfax from the standpoint of attractiveness is the new Starbright, described along with the Maytime and Redstar strawberries in Circular No. 597 by George M. Darrow. Shown a box of Starbright strawberries from one of the trial plots, a commercial grower exclaimed: "That's the prettiest quart of strawberries I ever saw!" In eastern Maryland, Maytime has been earlier, and Redstar has been later, than any standard variety now in the trade, when grown under the same conditions. Starbright is a midseason variety of good quality.

NEW AND LARGER BLUEBERRIES

And when things look blue in the small fruit investigations project, nobody worries, because the blue things are very likely to be some of the new and larger blueberries described by George M. Darrow and J. H. Clark in Circular No. 589: "The Atlantic, Pemberton, and Burlington Blueberries." These three new varieties are being introduced as a result of our cooperative work with the New Jersey station. All were originated by the late Dr. F. V. Coville, who had charge of the blueberry breeding work of the Department until his death in 1937.

The Atlantic is a cross of Jersey x Pioneer made in 1925, and was selected from a field of seedlings grown on the Joseph J. White Company property at Whitesbog, N. J. It has been particularly outstanding on the rather fertile soil at Pemberton, N. J. It is what is known as a "best blue;" that is, it has a maximum bluish coloration as contrasted to the bluish-black of other varieties.

The Pemberton is a Katharine x Rubel cross made in 1921 and selected from a field of seedlings grown on the Joseph J. White Company property at Whitesbog also. It is a darker blue than the Atlantic, with flavor that is good at all times, with a slight aroma.

The Burlington is a cross of Rubel x Pioneer made by Dr. Coville in 1916. The picking quality of this variety is superior to nearly all commercial sorts for it separates from the stem with the least tearing of the flesh and skin. Because of this ease of separation it keeps better than most blueberries.

Cultivated blueberries in the Northeastern States have been derived chiefly from the so-called highbush or swamp blueberry, Vaccinium Corymbosum L., native to the region that extends from southern Georgia to southern Maine and west to southern Michigan.

The most notable characteristic of cultivated varieties as distinguished from the wild sorts is their larger size. The Atlantic, Pemberton and Burlington are all notable for their large berries. The Atlantic and Pemberton, in fact, are larger than any named variety now in commercial production, and approach in size the Dixi which is not yet in commercial production.

A sample of wild highbush berries purchased from a roadside stand, for example, had 384 berries to the half-pint cup. Rubel, which is the best selected wild bush variety widely cultivated, runs 184 to the half-pint cup, and Jersey, the largest hybrid variety widely grown, averages 100. The Atlantic and Pemberton averaged 73 and 82 berries, respectively, to the half-pint cup. To put it another way: The Rubel, the best selection from the wild, is about twice the size of the average wild berry; the Jersey over three times the size; and the Atlantic and Pemberton are four and five times as large as the wild blueberries.

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"We have now had 775 hours of chilling, just 35 hours below average," he writes February 3d from the U. S. Horticultural Field Laboratory. "In the orchard, Peento trees are about 40 percent full bloom, and there are a few open blooms on Potinini. Buds on varieties having a cold requirement similar to Hiley show appreciable swelling, while Early Rose buds are still 'tight.'" He had written January 13th: "There would appear to be little chance for serious prolonged dormancy troubles this season. On the other hand, we should have a good opportunity to test out dormancy-breaking sprays at Albany this winter."

He contributes an interesting summary of the 1940 peach marketing season: Rail shipments of peaches from Georgia amounted to 5,810 cars, he reports, and truck shipments to 1,910 cars. The rail movement was 1,246 cars greater than for 1939, and only 1,510 less than for 1938. Young plantings just coming into bearing in the Fort Valley area are given credit for holding up the State yield in spite of the heavy loss in central Georgia from frost damage. Peach County, of which Fort Valley is the county seat, again led the list of Georgia counties in peach production.

G. A. Meckstroth, Willard, N. C.

"During this period I examined buds collected to check up on mite population in blueberry buds," he writes from the Coastal Plain Station for the first half of January. "At one place 9 out of 10 Cabot buds examined were heavily infested and 1 moderately. Sometimes there were as high as 20 mites on a single bud-scale, which would make a population ranging from 100 to 200 or even more mites per bud.

"In the past I have noticed that the tips of the outer bud-scales of infested buds have a grayish appearance, but I examined a number of fairly tight buds that did not show this condition and found them heavily infested. Out of 10 Rancocas buds, 4 were heavily infested, 2 moderately, and 4 lightly. I examined 10 Cabot buds but did not find mites in any of them, though I found predaceous mites in 2. Out of 10 Cabot buds from another place, I found 3 with a light infestation, but did not find any in the other 7....

"This week I found blueberry canker disease on the Scammell variety for the first time. I have been considering the Scammell as immune to the disease, but found the blister stage bearing fungus fruiting bodies on one stem. I did not see any of the rough-bark condition caused by the disease on Cabot and Pioneer varieties. The June variety is about as susceptible to canker as Cabot, but the plants react differently--June plants show only the blister stage while Cabot plants of the same age show the rough-bark condition."

DECIDUOUS FRUIT INVESTIGATIONS

H. F. Bergman, Amherst, Mass.

"On the trip to East Wareham this week bogs were found to be frozen over so that it was possible to take samples for the determination of the oxygen content of winter flooding water under ice," he writes January 24th from the Cranberry Disease Field Laboratory.

"Measurements of light intensity under ice were made also. Although there had been open water on the bog some four or five days previously the ice was found to be 4 to 6 inches thick. During the few days since the bog had frozen over entirely the oxygen content of the water had dropped to 70-75 percent of its oxygen capacity at two stations near the center of the bog. At one station near shore where ice had been present for a longer time the oxygen content was down to 60 percent of its capacity. Early in December, before the bog had been flooded, galvanized sheet iron cylinders 5 1/2 feet in diameter were placed in three locations on the bog as a means of preventing or reducing the aeration of the water by wind action and by photosynthetic activity of the vines. The method was effective as the oxygen content of the water inside the cylinders was about 30 percent less than that of the water outside.

"With reference to light intensity under ice it was found that clear ice 5-1/4 inches thick allowed 80 percent of midday light to pass through it. Ice of the same thickness but somewhat clouded by snow frozen into it cut off only 1 percent more light than clear ice. Ice from 4 to 4-1/2 inches thick, and somewhat cloudy, allowed from 85 to 88 percent of the light to pass through...

"The final report on the number of barrels of cranberries produced in Massachusetts in 1940 is 325,000, which is the exact figure reported last fall by the Government Crop Reporting Service."

N. H. Loomis, Meridian, Miss.

Writing from the U. S. Horticulatural Field Station on January 18th he says:

"There are a good many signs of spring as indicated by flowers on camellias, tea olive, winter jasmine, January honeysuckle, soulangeana magnolias, and various bulbs; however, peaches and pears fortunately show no signs of growth as yet.

"It seems that winter covercrops have made very little growth. Vetch has failed to make any kind of a ground cover although the seed germinated long ago and there is a good stand. Various clovers that are being tried are little if any better.."

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"The cranberry growers of Ocean County met January 23d and those of the State on the 25th," he writes from the Cranberry and Blueberry Disease Laboratory January 31st.

"The principal topics of discussion were: A prospective labor stringency at next harvest time; the fact that in 1940, for the third successive year, the Wisconsin crop exceeded that of New Jersey; and the advisability of early drawing of winter flowage in the spring. Prices received for the 1940 crop were regarded as very satisfactory.

"A representative collection of samples of fruit from the hubrid seedlings has been submitted to a number of growers, inspectors and selling agents, to increase our knowledge of which factors of appearance were preferred for New Jersey. The results, not yet complete, are interesting. Fruit gloss was demanded, and a berry showing good red color and uniformity of color, good size and uniformity of size was preferred even though it was definitely pointed in shape."

C. O. Hesse, Davis, Calif.

"You have probably heard of our wet winter," he writes in a letter to Dr. Cullinan, dated January 27th. "Today we have a total rainfall of nearly 16 inches, which is nearly 6-1/2 inches above normal for this date...

"I though you would be especially interested in some of our figures on hours below 45° out here this year. You may recall that last year the very warm winter resulted in a large decrease in apricot crop in the State. This winter is turning out to be even warmer. Up to January 20th, we had a total of 618 hours below 45°, as compared to 715 hours for the same date last year.

"The rainy weather certainly hindered the accumulation of hours of cold. Experience has shown that cloudy and foggy weather, however, is an aid when we are running short of total hours of chilling required. Some of the men seem to think that we will have enough of this effect to overcome a large part of the deficiency; however, unless we get considerable cold in the next month it seems doubtful that we can expect a full crop of apricots.

"Several almond varieties are now in bloom. Harriott and Harpareil are most advanced.

NUT INVESTIGATIONS

C. E. Schuster, Corvallis, Oreg.

"Filbert pollination is progressing nicely in the field with such good weather and thorough coverage," he writes January 25th. "One interesting thing is that the White Aveline which normally is early is later than the Daviana, which is a midseason pollenizer. From some of the material that I saw recently even the late DuChilly is going to shed pollen with the so-called early White Aveline. This is another indication that there is no regular annual sequence in blooming dates that can be absolutely depended upon. Therefore several pollenizers are advisable in filbert orchards."

He had written January 18th: "In cover crop trials we have encountered a different trouble this year. Slugs in some cases have completely eaten off the peas and vetch. We examined one orchard where we had fertilized plots last fall and could not find a single vetch or pea plant in the plots. Another grower reported that practically all his peas were eaten off and now the slugs were attacking the vetch. The grains do not seem to be affected. In all these orchards the native growth cover such as annual bluegrass, chickweed, rye grass, etc. is exceptionally heavy this year. Where we had fertilizer put on very late last spring, apparently a great deal of it carried over this season. There the chickweed has grown so heavily that we could hardly find any of the sowed cover crop of vetch."

Paul W. Miller, Corvallis, Oreg.

Writing from the U. S. Fruit Disease Field Laboratory on January 11th he said: "On Thursday of the current week a field trip was made to Dundee, Oreg. where results of studies on spraying for the control of filbert blight in the nursery were taken. In the sprayed portion of the nursery only 0.4 percent of the nursery trees examined contained cankers on the trunks, while on the untreated portion 3.2 percent of the trees were found so infected.

"Although the results would have been more outstanding had the incidence of the disease in the untreated plot been greater, they are, notwithstanding, encouraging as they indicate that it may be possible by a combined excision and spray program to in time eliminate filbert blight in the nursery, thereby automatically controlling filbert blight in future plantings since most, if not all, blight infection in the orchard apparently originates in the nursery and is brought into the planting on diseased nursery stock from whence it is subsequently spread by man on tools and by rain."

NUT INVESTIGATIONS

Felix S. Lagassé, Gainesville, Fla. (Tung investigations)

"The serious damage done by the cold on the nights of November 15th and 16th is now becoming more apparent to the growers, for even the most optimistic and promotional types are now admitting that there was serious damage. At one place the damage extends back into 6 and 7 year wood, such wood being absolutely dead. I have been trying to visualize what this particular tung grove will look like next spring with new growth probably starting back near the base of the main limbs in many instances, a deep periphery of dead wood on the outside and which will undoubtedly never be cut off due to the excessive costs on a low price per acre crop, and in view of the fact that they will have but little fruit next year except on the higher areas."

George F. Potter, Bogalusa, La.

"Visits to Georgia and Florida have brought out the fact that injury by cold-weather of mid November was very slight in South Georgia and not at all serious in the mature tung orchards in the vicinity of Tallahassee, Fla. However, near Gainesville, Fla. the damage is much worse than in any other section. In one orchard severe killing back of all the branches has occurred.

"The size of the 1940 crop is gratifying. In several large plantations estimates made in the fall are being revised upward. Productivity is increasing with age provided the orchards are well cared for and on good land. Also, the percentage of oil is rather high this season according to early results obtained in the Gainesville laboratory. This is surprising in view of the fact that severe drought in September and October caused the nuts to fill rather poorly. Mr. Painter believes that there has been a reduction in thickness of the hull that more than compensates for the poorly filled kernel."

DISEASE-RESISTANT VARIETIES OF VEGETABLES FOR THE HOME GARDEN

Leaflet No. 203, Disease-Resistant Varieties of Vegetables for the Home Garden, by R. J. Haskell and V. R. Boswell, just from the press, describes some of the diseases that have caused heavy losses to the home vegetable gardener and gives the names of and a few facts about varieties resistant to these diseases. The list of resistant varieties includes asparagus, bean, cabbage, celery, cucumber, lettuce, muskmelon, potato, pumpkin, spinach, sweet corn, squash, tomato and watermelon.

Suggestions are given, also as to the best methods of waging war against home vegetable garden diseases in general.

SUBTROPICAL FRUIT INVESTIGATIONS

W. W. Aldrich, U. S. Date Garden, Indio, Calif.

"The 1940 date crop, amounting to about 12 million pounds, is now all picked. We graded our last experimental lot just after Christmas. Using our equipment, which we built, we graded 60 pounds of fruit from each of the five or six pickings of each of 22 plots. The proportion of fruit in each grade which we obtained agrees very closely with that obtained commercially for the Indio area, which was:

Grade	Percentage of Fruit (Percent)	Usual Return to Grower (Dollars)
Extra Fancy	1	0.15
Fancy	9	.09
Choice and Standard	51	.06
No.1 Dry (Hydrated)	18	.05
No.2 Dry (By-products)	19	.03
Culls	2	.005

The relatively small amount of "extra fancy" and "fancy", and the large proportion of "No.2 Dry" cause this 1940 crop to be considered "poor". The fruit ripened faster than usual, so that an abnormally large proportion of the crop was picked in September and early October, when the weather was warm. The rapid ripening was probably the result of one of more factors: early (3weeks) flowering, a relatively light crop, and high maximum temperatures in June and July. But, on the basis of the usual return to growers, the 1940 fruit should average about $ .05 per pound. Date gardens generally produce about 7500 pounds per acre at a total production cost of about $ .04 per pound. This means a probable net return to growers of about $75.00 per acre. The better plantings produce 10,000 pounds per acre, and should return about $150.00 per acre.

CITRUS FRUITS

Of the estimated 133 million box citrus crop for the U. S. from 1940 bloom, nearly half will be produced in the Southwest (California and Arizona):

Washington Navel and other winter oranges	17,500,000 pkd.bx.
Valencia oranges	27,500,000
Lemons	12,000,000
Grapefruit	3,800,000
	60,800,000 pkd.bx.

Available statistics indicate that Washington Navel in 1940 returned (price delivery packing house) about $.24 per box on a 177 box-per-acre yield, or $42.48 per acre; while Valencia returned only about $ .19 on a 229 box-per-acre yield, or $43.51 per acre. While grapefruit in the coastal and interior valleys, which ripens in summer, seemed to be "red ink" last year, grapefruit in the desert (which ripens 6 to 7 months earlier) in many cases was profitable. Dancy tangerines grown in the desert and picked for the Christmas trade were profitable in both 1939 and 1940.

Hire of Special Conveyances

In interpreting Paragraph 11(c) of the Standardized Government Travel Regulations with respect to disallowances for the hire of a conveyance of another Government employee, of a member of the traveler's family, or of a member of the family of another Government employee when not properly explained in the account, the Comptroller General of the United States, in Decision B-13635 of January 3, 1941, held as follows:

> "While the quoted regulation does not expressly require an employee who has hired an automobile and who claims reimbursement for such hire to state in each instance that the automobile was not hired from another Government employee, from a member of the traveler's family or from a member of the family of another Government employee, yet the furnishing of such a statement is consistent with the plain purpose and intent of the regulation. When there is nothing on the receipt or otherwise with the voucher to indicate whether the person from whom the conveyance was hired is, or is not, a Government employee, etc., there is no basis for assuming or presuming that such person is not a Government employee, etc. The mere omission of such fact or silence in respect of the inhibition appearing in the quoted regulation may not be accepted as establishing that the hiring does not contravene the regulation. The plain purpose of the regulation is to preclude the allowance of charges for the hire of a conveyance of another Government employee, etc., unless the conditions referred to therein are shown to exist. Where nothing is shown with respect to such conditions, the fact that the hiring does not contravene the regulation should be shown by a positive statement, thus leaving nothing to presumption, assumption, or inference.
>
> "Accordingly, you are advised that this office is unable to concur in the view or understanding set forth in the first part of the second paragraph of your letter, and that in all such cases the traveler will be required to state whether the person from whom the conveyance was hired is, or is not, a Government employee, etc., and if in the affirmative, to make the showing required by the regulation in order to establish that the charge made for such hire is properly allowable.

- - - BUDGET AND FINANCE CIRCULAR 346, Jan. 21, 1941.

TIMING OF PROCUREMENT PROGRAMS TO AVOID DELAY AND CONGESTION

Budget and Finance Memorandum No. 183, dated December 28, 1939, invited attention to the extraordinarily large percentage of contract awards which were being concentrated in the last few months of each fiscal year. While it was pointed out that this office appreciates the fact that the husbanding of funds as a reserve against possible emergencies, preparation for seasonal programs, and other factors entirely consistent with principles of good management may tend to concentrate purchases during the latter part of the fiscal year, the belief was expressed that stabilized operations over a period of years should create a pattern which will enable a logical forecast of the major procurements.

Statistical records maintained by the Division of Purchase, Sales, and Traffic show that instead of effecting a more balanced distribution of procurement throughout fiscal year 1940 the number of awards made by it during the last quarter increased from an average of approximately 40% for the fiscal years 1937-8-9 to 48.9% for the fiscal year 1940. Figures for the current year to date based upon an estimated annual total indicate only minor improvement in this condition, yet the need for the development of more orderly procurement schedules, determination of priorities, and an analysis of potential requirements is greater at this time than it has been for several years, and the need for sound management and procurement policies will become increasingly more important as the Defense Program gains momentum. Moreover, intelligent planning of the Department's purchases will be helpful not only to the Department but will contribute effective cooperation in the National Defense Program.

Industrial conditions are now undergoing a material change, which is forcibly illustrated by notations currently appearing on bids, such as

> " * * * we have given a delivery of 240 to 300 days after receipt of the contract. * * * we would anticipate the delivery if possible."
>
> "Indicated delivery dates are subject to the effect of priorities * * *."

The following analysis of the distribution of the awards made by the Division of Purchase, Sales and Traffic during the past four years as compared with estimated figures for fiscal year 1941, shows that a more balanced distribution was obtained within our present framework of operations in the fiscal year 1937 than in the fiscal year 1940:

	1937	1938	1939	1940	1941
July	5.0	5.6	5.2	6.7	8.7
August	8.4	5.5	6.5	4.9	5.1
September	7.4	7.0	6.1	4.7	4.3
QUARTERLY TOTAL	20.8	18.1	17.8	16.3	18.1
October	8.0	6.0	5.7	4.1	5.1
November	5.5	5.1	5.7	5.5	6.7
December	5.0	5.9	6.9	4.9	
QUARTERLY TOTAL	18.5	17.0	18.3	14.5	
January	6.1	5.7	5.8	5.6	
February	7.1	6.6	5.7	6.0	
March	12.2	9.9	9.1	8.7	
QUARTERLY TOTAL	25.4	22.2	20.6	20.3	
April	6.7	7.4	8.3	12.8	
May	10.8	9.5	12.2	15.5	
June	17.8	25.8	22.8	20.6	
QUARTERLY TOTAL	35.3	42.7	43.3	48.9	

The concentration of nearly one-half of the annual purchases into the last quarter of the fiscal year places the Department in a defensive position. This constitutes a challenge to the management to sharply reverse the present trend and inaugurate a more balanced schedule. Partial adjustments can be made in the current fiscal year by effecting a better distribution during the final two quarters. The complete cooperation of all officers and employees to this end is solicited.

It is also requested that requirements be placed in the hands of purchasing and contracting officers not later than June 5, 1941, and that no invitations for purchases chargeable to the current year's funds be opened after June 16, 1941. Should some unusual circumstance call for action inconsistent with the policy herein outlined, each case shall be accompanied by a statement setting forth the facts which make it necessary to give special consideration to such transactions.

- - - BUDGET AND FINANCE CIRCULAR 331, Jan 9, 1941.

ADMINISTRATIVE NOTES

Outside Publications — Regardless of the editorial requirements of the journals involved, it is desirable that all manuscripts for outside publication use the standard heading: "Transplanting Large Fruit Trees. By John Q. Doe, specialist, Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, U. S. Department of Agriculture." We find that when the wording "United States Department of Agriculture, Bureau of Plant Industry," is used at the top of the sheet, as in a letterhead, many journals regard it as a letterhead and do not print it so that the paper appears with the name of the author and possibly that of the Division, but with nothing to show that it originated in the Bureau or Department.

Remember, too, that Mr. Gould needs an original, a carbon copy on yellow sulphite paper (Government Printing Office stock No. 290) for the Office of Information, and a carbon copy on thin white paper for his files. In the case of manuscripts to be published in one of the Department's series (Technical Bulletin, Farmers' Bulletin, Journal of Agriculutral Research, etc.) an original and one carbon (on thin white paper) are needed. The carbon copy is placed in the Bureau's Library in Washington for consultation by any one interested while the original manuscript is being given editorial attention. An original and one carbon copy (on thin white paper) are required for papers for the Plant Disease Reporter.

These copies (originals and carbons) refer to those needed by the administrative officers; do not fail to prepare additional copies for your section leader and for your own files!

Department Publications — Speaking of manuscripts submitted for publication in the Department's series of bulletins: Too many of them are coming in that are not complete as to essential details, indicating that the instructions for the preparation of manuscripts, many times repeated here and elsewhere, have not been given the attention by authors that they should receive.

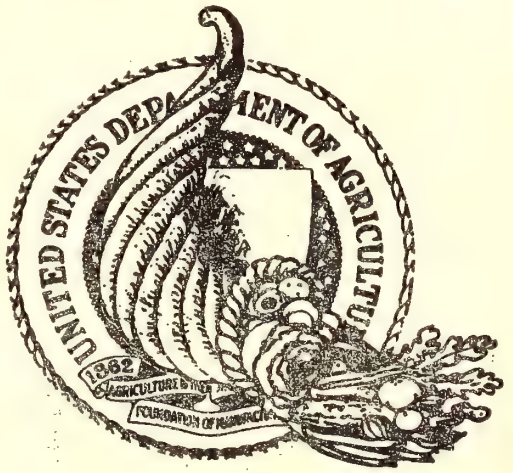
We find, for example, that manuscripts quite often lack both a table of contents and list of illustrations. Sometimes figures are not referred to in the text; and the requirement that legends for text figures should be typed in the manuscript immediately following the first reference to them (and set off from the text by lines above and below) is constantly overlooked. Sometimes, too, we find that the legends as given in the text and in the list of illustrations are worded differently. In the list of literature cited we find items not referred to in the text, while few authors seem able to cite papers, even their own, with complete accuracy. Photographs should be attached to the sheets by inserting their corners in slits cut in the sheet--never by pasting or pinning them to the page.

Vol. 13 No. 4 February 15, 1941

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R.

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. XIII U. S. Horticultural Station, Beltsville, Md. No. 5
March 1, 1941.

Tripping the thrips ! The losses to onion growers from thrips attacks are enormous, probably greater than from all other insects and diseases of onions combined. It is encouraging, then, to learn that breeding for resistance appears to offer considerable hope for a rather effective control of thrips. Discussing onion breeding, Dr. H. A. Jones told a meeting of the Michigan Muck Farmers Association last month something of the work being done on breeding for resistance to both insects and diseases. The most important problem at present, he explained, is the breeding for resistance to thrips, as this pest is found in all districts every year.

The Spanish types such as Sweet Spanish and Early Grano have definitely been shown to have at least a moderate amount of resistance, he explained. Sweet Spanish was not grown in this country before 1908, but since that time it has developed into one of our most important varieties. The Early Grano variety, first introduced from Spain in 1925, under the name Valencia Grano, has not as yet reached the stage of popularity of the Sweet Spanish, but indications are it will be grown extensively in the next few years, especially in the early onion districts of the South and Southeast.

In most varieties, however, resistance to thrips is not very pronounced and for this reason a number of the States now cooperating in the National Onion Breeding Program are concentrating on the development of more resistance in the types that are of local importance. The thrips resistant parent being used is the White Persian, most resistant of known varieties, with a resistance due in part to certain growth characters and in part to what may be structural or physiological characters but as yet not well understood.

The shape of the leaf blade, for example, is one character that undoubtedly helps to restrict the thrips population. In most onion varieties the leaf blades have a flat side in opposite leaves. These flat sides are face to face and in young leaves are closely pressed together for some distance so that the thrips are well protected in this area against parasites and unfavorable weather conditions. In the White Persian, however, the leaves of the young plants are almost circular in cross section and where they happen to be in contact the protected or sheltered area is very small. The wide angle between the two innermost leaves of the young plant is another White Persian character that helps to hold the thrips population in check because a smaller area is provided for shelter. Still another character that is probably of some importance is the considerable vertical distance between the leaf blades. It is evident that thrips would be shielded less from the elements when the leaf blades are far apart in their vertical position than when close together. This wide spacing of the leaves is caused by the increased growth in sheath length of each new leaf. This habit of growth produces a mature plant with an extremely long sheath region.

Aside from the growth habit of the White Persian variety, there are certain other characters that help minimize thrips damage. Color of foliage seems in some way to be associated with injury. Thrips damage as a rule first becomes conspicuous during hot weather when there appears a silvering and then a drying and dying back of the foliage. This injury is most severe in varieties having dark green foliage similar to that of most of the storage types of onions; it is less severe as a rule in varieties having the Sweet Spanish type of foliage and is least severe in White Persian, the leaves of which are lighter green in color than those of any other known commercial variety. The injury to the dark green foliage types may be accentuated by increased temperature in the tissue of the leaves. We may have a condition here similar to that in the tomato fruit where it has been shown that the light green portion of the unripe fruits have less tendency to sunburn than the dark green. Harvey of Minnesota has found that the dark green areas absorb light more readily than the light green and consequently these tissues are subject to higher termperatures. Certain varieties of tomatoes such as Danmark are known to lack the dark green shoulders on the unripe fruit, making them less subject to sunburn, and these are now being used extensively in tomato breeding programs all over the country. Too, the White Persian onion has a thicker leaf tissue than any other variety, and it is possible that this greater depth of tissue may help prevent the drying out or burning that follows thrips injury.

The characters of the White Persian that give thrips resistance have been described in some detail, said Dr. Jones, because it is these characters that we are attempting to incorporate in a number of commercial types. We do not expect to be able to breed varieties that will not harbor a few thrips, but we hope to produce varieties much more resistant than those we now have, and definite progress is being made in this direction.

NUT INVESTIGATIONS

F. N. Dodge, Shreveport (Robson), La.

"This week I have excavated and examined the rooting of a scion rooted Moneymaker tree we have on this station," he writes from the Robson pecan station February 1.

"The tree was planted five years ago as a Moneymaker pecan tree on seedling pecan roots. At time of planting the tree was girdled by removing a half inch ring of bark from the trunk about six inches above the graft union. The girdle was covered with a thick wrap of wire to prevent subsequent growth bridging the girdle and the tree was planted extra deep so that the girdle was more than two feet below the ground surface. No root promoting materials have been used on this tree.

"On examination it was found that the tree had died and rotted below the girdle. The rotted wood with the ring of wire between the rotted and live wood was found in place as evidence of what had happened. An excellent production of new roots has taken place right at the girdle. There roots are well enough developed for the tree to be transplanted. The roots all come out latterly with apparently no root appearing to become the new tap-root. There is also an apparent tendency for the roots to grow toward the surface.

"Two of these trees were planted at the time, but during the first year they had a hard struggle for existence which was too much for one of them. The other survived the first year, and made almost no growth for two more years. Then, in the fourth year, it began to improve and this year has made excellent growth of top. No attention was given to these trees other than cultivation.

"The latter of these two trees shows that it is possible to produce scion rooted or clonal rooted pecan trees; and it appears to me to be probable that with better care, and a modification of this method including the use of root promoting materials, that scion rooted pecan trees can be produced from trees budded on seedling roots and be ready for transplanting in three years."

John R. Cole, Albany, Ga.

"More plantings of new orchards are being made this year than at any time in recent years," he writes February 15th from the U. S. Pecan Disease Field Laboratory. "While most of these are rather small I have heard of one orchard of 1800 trees that was planted here in Georgia. Nurserymen report that the sale of trees during this past year has been better than at any time since 1929. All nursery stock has been sold long ago."

ADMINISTRATIVE NOTES

Preservation of Accounting Records

Bureau of Plant Industry Memorandum 1175 of February 12, 1941, directs attention to Department Regulation No. 1539, quoted below, on the preservation of accounting records and stresses the importance of meticulously observing all of its provisions. It should be carefully read by all and a prompt review made of present accounting procedure to see that your records are completely in accord with the requirements as cited in the regulations. If there are any questions as to their application, advise Mr. Gould at once, stating details:

"1539. Preservation of Accounting Records. Chiefs of the various bureaus and offices shall determine the accounting and fiscal records to be maintained in their accounting offices in Washington, D. C. When retention of these records and supporting documents is no longer necessary, they may be disposed of in accordance with the provisions of Regulation 1534, subparagraph (2).

"Bureau chiefs may also determine the accounting records to be maintained at each field station, office, or other point at which Departmental work is conducted through the year, but these records must include, copies of the following, which shall be retained for a period of at least five years:

1. Copies of all purchase vouchers issued at that point and of supporting documents, including purchase orders, requisitions, copies of vendors' invoices unless purchase is itemized on voucher, and receiving records;

2. Copies of all payroll vouchers prepared by the station or office and of supporting documents, including time reports and time books;

3. Copies of all records and supporting documents pertaining to collections of funds including receipts, records of transmittal, certificates of deposit, and coupons, certificates, or other documents which form the basis for collections;

4. Copies of all records relating to sales, exchanges, or disposition otherwise of surplus products or materials, including prenumbered sales slips, production records, approved exchanges, correspondence relating to exchanges, etc.

"After retention for five years, these field records may be disposed of in accordance with the provisions of Regulation 1534, subparagraph (2). They shall be maintained accurately, shall be kept current at all times, and shall be kept in systematic order for auditing purposes.

"No account or record shall be withdrawn from the files nor shall copies be furnished to any person unless approved by the official in charge of the station or office.

"The accounts and records of those field stations or offices which are operated only a part of the year shall be forwarded to the bureau in Washington or to some other designated office in the field for safekeeping at such times as the official in charge believes desirable.

"When a bureau chief desires to retain any accounting records in either the Washington, D. C., offices of the bureau or in the field for a period longer than five years and such retention necessitates the provision of additional space for files, the Chief of the Office of Plant and Operations may request from the bureau a brief report showing the necessity for keeping the files, including an estimate of the period of time for which their retention is judged to be necessary."

Dr. Auchter adds:

"It is of fundamental importance that all members of your staff in the field who have supervision of localized field work observe carefully this regulation. It is suggested that a specific acknowledgment of this memorandum be secured from each of your field supervisors. It is important that these regulations be meticulously observed. From time to time members of the staff of the Comptroller General visit field stations, and unless these records are carefully maintained they cannot make the studies required of them, and the Bureau is subject to criticism. All regulations should be carefully observed, and our records should be adequate and clearly substantiate the fact that the regulations are observed.

"All too frequently we have had it called to our attention that employees in the field will divide a purchase so as to come within the $50.00 limit. This is not only contrary to the regulations, but contrary to law. Bids must be secured on all purchases over $50.00. If there is an emergency need for an order in excess of $50.00, informal bids should be secured, and the purchase made on an exigency statement. The bids should be made a part of the exigency showing that competition was obtained, and that the low bid was accepted.

"Your cooperation in this matter will be very much appreciated."

DECIDUOUS FRUIT INVESTIGATIONS

Elmer Snyder, Fresno, Calif.

"Grape seeds, the results of the 1940 crosses, were planted in flats the later part of October for a stratification period of two months," he reports February 1. "The flats were transferred to the greenhouse the later part of December, the first seedlings appeared through the soil 14 days after the heat was turned on in the greenhouse. Additional seedlings appeared daily and by the end of January, 36 percent of the seeds had germinated. More seeds will undoubtedly germinate during the next month. Flats directly over the heating pipes produced more uniform and quicker germination...

"Continuing the studies on grape seedlings resistant to rootknot nematode, it appeared this season that seedlings of Solonis x Othello No. 1613 were less susceptible to nematode attack than either Dog Ridge or Rupestris x cinerea seedlings. Considerable variation in susceptibility to nematode attack was noted within the seedlings of the same stock variety. Field tests of the less susceptible seedlings in soil inoculated with rootknot indicate that such seedlings will make vigorous growth even though some 'knot' may be present on the roots."

N. H. Loomis, Meridian, Miss.

Writing from the U. S. Horticultural Field Station on February 1, he says: "Grape seed planted January 6 has given excellent germination already. Previous plantings after various cold and moisture treatments have never given as quick nor as high germination as the one did this year after the seed was stratified in moist sand from October 12th to January 6th. (For stratification, ordinary window screen wire was made into envelopes which were fastened together with a midget type paper stapler)."

BANANAS USED FOR LAUNCHING SHIPS

Since banana culture in the United States (so far as we know, that is) appears to be confined largely to Florida south of the latitude of Fort Pierce and Tampa, we hope that Dr. Frank Gardner saw the recent United Press item declaring that the Maritime Commission is contributing to hemispheric solidarity by increasing the consumption of ripe, juicy bananas--in launching new ships! The objective of a launching, after all, is merely to get the vessel to slide promptly from dry land into deep water and for this purpose juicy bananas have been found an efficient substitute for launching grease. Florida banana growers would hardly permit a little matter of hemispheric solidarity to interfere with this new market!

COMPENSATION COMMISSION

Injuries: Sick and Annual Leave — The question has recently been raised concerning the use of sick and annual leave in the event a Federal employee is injured in the performance of his official duties. When an employee is partially or totally disabled as a result of injury sustained in the performance of duty, it is optional with him whether he exhausts his sick and annual leave before claiming compensation from the United States Employee's Compensation Commission. As far as the Compensation Commission is concerned, it is optional with the injured employee whether he exhaust his sick and annual leave before going on the Compensation rolls. However, if he has exhausted his sick and annual leave and then is put on the Compensation rolls, three days must be lost before he can receive pay from the Commission; and thereafter receive, at the most, only two-thirds of his regular pay for total disability period. On the other hand, it might be desirable to retain some leave for other purposes. However, it is up to the employee to make his choice, provided, of course, it meets with the approval of his official superior.

Injury sustained going to or returning from work — This is another question that occasionally comes up and which we feel should be brought to the attention of all Division employees. A personal injury sustained by a civil employee of the United States while on the premises of employment for the purpose of going to or returning from his work or performing duties connected with or incidental to his work, and not while the employee is there merely for some personal reason, may be considered an injury sustained "while in the performance of duty." A full and complete statement of all facts should accompany the report of an injury sustained under such circumstances, in order that the Commission may determine the right of the injured employee to the benefits of the Compensation Act.

Please attach these paragraphs to your mimeographed instructions concerning procedure in connection with Employee's Compensation Commission claims, for your future guidance.

--News Letter, December 1, 1939, p 268

Injuries to Employees. — In some instances recently, employees injured in the performance of their official duties have obtained medical aid from physicians designated by the Compensation Commission, but no report was made to the Business Office, and no Forms C.A.1 and C.A.2 submitted until requests for these forms by the Compensation Commission revealed that the injuries had been sustained. All injuries should be reported to the Business Office on Forms C.A.1 and C.A.2 as soon as possible after they occur. (See page 5 of mimeographed instructions)

Full details of cases requiring hospitalization should be reported immediately. It is sometimes necessary to confer with the Commission regarding procedure in such cases, and without complete information prompt

action is impossible. Except in emergencies, prior approval should be obtained from the Commission (via the Business Office) for hospitalization and also for necessary dental treatment.

Considering the responsibility of the official superior for obtaining adequate medical treatment for employees injured in the performance of duty, it is of the utmost importance that he become familiar with the mimeographed instructions that the Business Office has distributed to all field stations. Furthermore, he should see that all employees under his supervision are acquainted with the benefits accruing to Government employees, whether wae (when actually employed) or permanent workers, under the Federal Compensation Act.

Form WP-10 This form, which is a mimeographed form regarding employees under emergency funds, is no longer required except when the injured employee is actually paid from emergency funds; otherwise type at the bottom of all Forms C.A.2: "Employee is not paid from emergency funds."

Responsibility of Certifying Officers In a decision by the Comptroller General (B-12296) October 2, 1940, in connection with a payroll where an employee paid from emergency funds had been overpaid because of annual leave granted in excess of that earned, responsibility for the overpayment was placed definitely upon the certifying officer regardless of the latter's contention that he could not personally ascertain the accuracy of each item appearing on a payroll covering many employees, but had to depend upon the correctness of the computations of various clerks preparing leave records and payrolls.

Dr. McCall, in Bureau of Plant Industry Memorandum No. 1166, dated February 4, 1941, transmitting the decision to Division heads, calls to the attention of all officers certifying vouchers the responsibility that rests upon them and directs that all possible steps be taken to make sure that the vouchers and payrolls they certify are correct factually as well as mathematically.

The moral of this decision should be that each certifying officer use as satisfactory a procedure as it is possible to develop to be sure that any voucher or payroll is correct, i.e., that the goods have been received; or that the person has been actually in duty status, either by being on the job or through having ample leave to cover absences during the period covered by the payroll, before he certifies such voucher form for payment.

Correction of an erroneous payment must come out of the pocket of the certifying officer, as the Government will not absorb any losses resulting from improper certification, even though the certification was made in good faith.

ADMINISTRATIVE NOTES

Supplies Practically all of our people in the field are furnished with a General Schedule of Supplies which lists by class numbers the items that may be purchased under contracts negotiated by the Procurement Division of the Treasury Department.

It has been pointed out from time to time by office memoranda, by letter, and through the News Letter that it is mandatory that some materials and supplies be purchased from contractors. Among these items are furniture, tires and tubes, batteries and parts, spark plugs, electric fans and parts, explosives and blasting accessories, and light bulbs. If it proves absolutely necessary to purchase such items in the open market, the purchase must be supported by a detailed statement sent with the voucher explaining just why it was necessary to make the purchase elsewhere than from the regular official contractor.

To determine just what items are included in this mandatory group it is only necessary to observe the opening statement on the inner page of each class shown in the contract schedules. For instance, the statement at the top of the page for Tires and Tubes (Class 8 and Class 83 reads: "For use by the executive departments and other establishments of the Government...within the Continental limits of the United States." Therefore all government activities in the United States are directed to obtain tires and tubes from the listed contractor.

Under Machine Tools (Class 40) it will be noted that the language quoted above is used with the qualifying statement: "But not obligating the following field services for the items indicated..." This permits the excepted activities to purchase certain items of the class in open market.

Under Hand Tools (Class 41) the opening statement indicates that the contracts are drawn specifically for Government agencies in Washington, D. C. and for such other services in the immediate area as are indicated. Somewhat similar language will be found under Laboratory Apparatus and Supplies (Class 57) but in both of these cases other activities than those listed may place their orders with the contractors if they wish to do so.

Contracts for the various items are for periods ranging from three months to a year. In ordering from Contract Schedules it is important to make certain that the particular contract has not already expired! Where an order is placed under an existing contract and delivery is not made until after the expiration date of the contract, the voucher covering the purchase should clearly indicate the date of ordering, or a copy of the order should be attached to the voucher. Time required for delivery is shown after each item on contract. A Government bill of lading should accompany the order unless the contract quotation is for delivery f. o. b. destination.

Tires and tubes and such other items as are usually required within known periods should be ordered sufficiently in advance of their need to avoid the necessity of open market "emergency" purchases, usually at prices considerably higher than those quoted by the contractor.

Most of the Eastman Kodak Company products (Class 18-F films, and 18-P, paper) may be obtained from the contractor at considerably lower prices than when purchased in the open market even where a discount is allowed. Where at all practicable such items should be purchased from the contractor, though field activities of this Department are not obliged to meet such requirements through the contractor.

When time of delivery permits, other substantial savings may be effected by purchasing from the scheduled contractor. As an instance, Prestone (Class 51-C-1554-15) is listed at $1.40 per single gallon, or $1.35 per gallon by the case of 6, with 2 percent 20 days allowed. This can be had from any of the distributors of National Carbon Company, Inc. This antifreeze sells for about $2.65 per gallon in the open market. It is a good practice to see what the General Schedule of Supplies has to offer before placing orders for materials and supplies.

Some employees find it difficult to keep their ever-changing schedule separates in proper form for ready reference. It is suggested that where any field office finds it frequently necessary to refer to the schedule items they order binders for the separates. Such binders are available, made especially for the separates, which permit easy replacement of separates that become obsolete so that the set may be kept absolutely up to date by the insertion of new supplements. For convenience, at least two binders are generally needed. Circulars are issued frequently by the Procurement Division listing changes made in the schedules. Corrections to numerous classes appear in each circular, printed in brief paragraphs on but one side of the sheet so that they may be clipped out and affixed to the item affected in the particular separate concerned.

Unless careful attention is given to all of these details, difficulties may arise in the settlement of vouchers covering purchases made in the field from schedules. The Supply Section of our Business Office will be glad to handle orders of any kind where doubt exists as to the proper procedure to follow. In requesting supplies through the Business Office, please give all information possible pertaining to each item--item number, description of the article, quantity, etc. In requesting chemicals, please state whether C. P., Technical, A. C. S., powdered crystals, granular, etc. All items of a laboratory nature should bear the firm's catalog number in order that the type of the article may not be in doubt. If all this information is included in your request for purchase it will expedite the placing of the order and will make additional correspondence unnecessary.

In determining the proper source of procurement, first consult the "Stock Catalog of the Central Supply Section." If the article is not available from that source, then consult the "Schedule of Stock Items--Procurement Division, Treasury Department." Then, if the article is not available from either of these sources, consult the separates of the General Schedule of Supplies.

Also bear in mind that articles produced by Federal Prisons Industries, Inc. must be obtained from that agency. Their schedule covers brooms, brushes, canvas goods, castings, chairs, clothing, cotton textiles, fibre furniture, gloves and mittens, mats, mattresses, shelving (steel storage), shoes and tents. If none of the foregoing as listed in that schedule are of the type required for your use, it is necessary to obtain clearance from the Federal Prisons Industries Inc. before purchasing elsewhere unless the schedule indicates that this action is not required. In such cases the articles may be purchased in the open market but the covering voucher should clearly show that they cannot be obtained from Federal Prisons Industries Inc. In order to prevent possibilities of suspensions by the General Accounting Office, we urge that all Prison Industries matters be taken up through the Business Office since many of the items are now stocked by Central Stores and by the Procurement Division, and other, such as gloves, mittens and shoes, are of a personal nature and may be purchased without prior authority from the Bureau.

TIMING PURCHASES

In this connection attention is again invited to Budget and Finance Circular No. 331 of January 9, 1941, in connection with the timing of procurement programs to avoid delay and congestion. This was printed in the News Letter for February 15 (pages 46 and 47) and was also distributed along with Bureau of Plant Industry Memorandum No. 1172 of February 12, 1941, to members of our staff who are apt to be concerned with purchases. This matter of timing purchases has been stressed each year but despite warnings an analysis of expenditures for the last quarter of the fiscal year ending June 30, 1940, showed practically 50 percent of the purchases as being made in the last quarter of the year!

It should be comparatively easy to determine your requirements for this spring so that most if not all of the purchases essential to spring work could be made before the close of the present quarter (March 31, 1941). It is also requested that you immediately make a careful survey of your needs for the remainder of the fiscal year, with a view to placing orders at an early date, either locally or through our Business Office. This will avoid the last-quarter congestion which this year may not only result in delayed deliveries but in incompleted purchases as well, to say nothing of a possible advance in prices for some commodities. It is our hope that we may have full cooperation in expediting purchases for the remainder of the fiscal year.

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. XIII U. S. Horticultural Station, Beltsville, Md. No. 6
March 15, 1941

Floriculture "The Bureau of Plant Industry continues to maintain a keen interest in floriculture in the work being done at the United States Horticultural Station, Beltsville, Md.," says the American Florist in one of the series of striking first-page editorials it has been running for some months. "It is unfortunate that every one in the florist trade can not pay a visit there to see at first hand the practical manner in which investigations are being carried on, and to meet and talk with the men and women who are doing the work. Most of them have a background of practical experience, and all of them approach the problem with practical methods."

Kind words, those, and beautifully illustrated by photographs--the first being a splendid view of the greenhouses and laboratories at the Beltsville station, and the others action pictures of some of our workers--Dr. Emsweller, Vic Lumsden, Phil Brierley and Miss Lucia McCulloch to date--under the heading "Beltsville Personalities."

Discussing the greenhouse and station equipment and facilities, the magazine points out that we have 160,000 square feet under glass, of which some 60,000 square feet are available for floricultural experiments. "The results of a study that developed a method of producing 90 percent doubleness in stocks, and a preliminary report of the serious effects caused by storing flowers and fruit together, have been published recently," it says. "Some publicity has also been given to the development of a new lily to replace Japanese importations. The work at Beltsville is progressing very fast and many other projects are under way that may be of infinite value to the entire florist industry."

"The floricultural work at Beltsville is under Dr. Sam Emsweller, and has been organized chiefly to work on problems that have a wide interest and are more or less national in character," the magazine explains in another issue. "The work is so organized that emphasis is placed on a comparatively few problems at any one time in order that these problems may be examined thoroughly and if possible a solution worked out.

"In addition to organizing and directing the work of the project, Dr. Emsweller is carrying on investigations on stocks that are designed to improve the quality of varieties and to assist in securing better quality seed for florists. Recently work has been completed on selecting doubles and this has already been discussed in the trade papers. Dr. Emsweller is also engaged in Easter lily breeding work, looking toward an industry of American-grown Easter lily bulbs. He is also now actively in charge of the chrysanthemum breeding work.

"Dr. Victor Lumsden has recently published on his work in connection with flower storage, investigations that clearly demonstrated the fact that minor quantities of ethylene given off by ripening apples and oranges prove very harmful to a wide range of cut flowers stored in the same room with the fruits. Dr. Lumsden is continuing these studies, and is also engaged in large-scale experiments on blossom drop of sweet peas. He is also carrying on work on forcing of bulbous iris and daffodils. Vic is trained in plant physiology and plant anatomy, and is applying his knowledge in these fields to the practical problems of the florist industry. With the new and enlarged facilities offered by the Horticultural Station at Beltsville, he is in a position to carry on experiments on a large scale.

"Dr. Philip Brierley is the pathologist of the floricultural group at Beltsville. One of his jobs has been a study of the virus diseases of Easter lilies, and he has already gone a long way in clearing up a very complex problem. Dr. Brierley is a great believer in getting everything possible out of his material, and a few years ago set up some forcing tests with Easter lilies that were being used for his disease studies. So in addition to the disease data, he has also completed a careful study of forcing responses of Easter lilies to various preplanting storages. The facilities and the new and modern equipment at the station will give Phil much greater possibilities for the exercise of his talents.

"Miss Lucia McCulloch of the floricultural group is devoting much of her time to the study of fungus diseases of gladiolus. She is shown in the accompanying photograph looking over cultures of the Fusarium that causes the common gladiolus yellows disease. She has demonstrated that chloropicrin applied to the soil will destroy the fungus; and has also found that certain varieties appear to be highly resistant to all types of Fusaria that she has collected during recent years. Miss McCulloch is a very capable bacteriologist and has contributed much fine work to the study of bacterial diseases of iris and other plants."

DECIDUOUS FRUIT INVESTIGATIONS

J. O. Reeve, Pomona, Calif.

"During the last few years there has been a definite trend toward the use of a permanent year-around crop or sod in citrus and avocado orchards in the La Habra area. In one of these orchards sodded to Bermuda grass the grower claims that the amount of water applied has not increased appreciably since the sod was established about two years ago. The little data available on the use of water by annual cover crops grown in citrus orchards indicates that the use of water by the cover and by the trees is approximately equal in the spring months before the cover is turned under.

"To estimate the probably relative use of water by mature orange and lemon trees under permanent sod as compared with the use under a bare uncultivated condition, sampling locations were selected in the above mentioned orchard and soil moisture determined before and after irrigations. In the block of lemons four locations were selected. Two were under Bermuda sod and two were bare and uncultivated. In each location of about 25 square feet containing three sampling stations, the soil was sampled to a depth of six inches, with succeeding samples taken at twelve-inch increments to a total depth of 42 inches. In the block of oranges, eight locations, each about 15 square feet, were selected; four with Bermuda sod and four bare and uncultivated. These locations were sampled in the same manner as in the lemon block.

"In the lemon block the use of water by the trees and cover under permanent sod culture calculated on a 30-day basis was 1.92 acre inches and the use by the trees with bare soil, 1.74 acre inches. The sod areas used 10 percent more water than the bare areas. In order to show the effect of surface evaporation upon both the sod and bare plots, the surface six inches was eliminated and the water use determined for the remaining 36 inches of soil depth. In the sod plots this use was 1.50 acre inches and the bare plots 1.23 acre inches. With the water use from the surface six inches eliminated, the sod plots used 22 percent more water than the bare plots. In the orange block the 30-day use under permanent sod was 1.98 acre inches in contrast to 1.65 for the bare areas, or an increase of 20 percent in the use of water by the sod areas over the bare areas. With the surface six inches eliminated the water use by the sod areas was 1.44 acre inches and by the bare areas 0.99 acre inches. The effect of eliminating the surface layer was to increase the difference in water use by the sod and bare areas from 22 percent to 45 percent. In both the orange and lemon blocks the moisture content of the soil in the surface six inches of the bare areas was reduced into the wilting range or to an air-dried condition by evaporation.

"While these results, because of the limited areas samples, are not conclusive they do suggest that the use of water by the sod was in part compensated for by the effect of shading of the soil surface and thus reducing evaporation losses."

DECIDUOUS FRUIT INVESTIGATIONS

With the way problems are piling up for the deciduous fruit investigator, we wouldn't be in Dr. J. R. Magness' shoes for anything--except, of course, in the last half of the ninth inning with the score tied, three men on base and two out. What we are thinking of right now, however, is the suggestion made by George H. Vansell, a bee specialist at the field laboratory maintained by the Bureau of Entomology and Plant Quarantine in cooperation with the University of California, that fruit breeders try to discover whether nectar concentration is an inherited characteristic, and if so, to use the information in the breeding of new varieties.

In an experimental orchard he studied where 10 plum varieties grew side by side, he found there was a range of from 10 to 28 percent difference in the sugar concentration of the flower nectar. The richer nectars attracted the pollinating bees; trees with weaker nectars were slighted. In other words, a few point of difference in the concentration of the sugar in the nectar may prove highly important in determining the set of fruit as between different trees. Trees with rich nectar are more likely to have the aid of bees in setting a full crop.

You will recall that this matter came up some years ago at Wenatchee, Wash. when our colleague C. P. Harley became interested in determining the cause of the lowered tonnage of apples that season in the Wenatchee district. In checking over the problem he decided that pollination was the deciding factor. In that season practically all fruit trees, regardless of type, were in full bloom at about the same time. The pollinating insects showed a marked preference for the cherry blossoms, however, so that there was a heavy crop of cherries while apple trees growing close by produced few fruits.

Of course, there is some danger in the possibility that if and when the plant breeder is able to produce fruits with richer and more abundant nectar, to attract the pollinating insects, he may find the nectar appealing to human consumers as well, so that the demand may begin to shift from fruits to flowers. It's all very confusing!

Still another worry for the investigator is found in the increasing use of X-rays, neutron rays, hot and cold storage and the like on seeds; the application of sprays to prevent pre-harvest drops or reduce blossoms, and so on. This new danger is brought out in a discussion of such treatments in the magazine TOBACCO. Describing a new race of plants just developed, it says: "New plants were grown from seeds whose innards had been thoroughly addled by X-ray bombardment, neutron rays and hot and cold storage..." Here, you see, is the first statements in non-technical terms of what happens to plants under these treatments. Their "innards were thoroughly addled..." Can the same thing happen to the investigators using the methods?

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"About 200 seedlings from last year's peach crosses have been transplanted to pots in the greenhouse, and several hundred more are being transplanted today," he writes from the U. S. Horticultural Field Laboratory on February 17th.

"While we will have all the seedlings we can conveniently handle this season, germination in general has been disappointing. Very good germination, up to 80 percent, was secured on Shalil seed from Beltsville, but the Fort Valley seed seemed to be inherently weak. Both lots were handled indentically in after-ripening. It may be that we left too many fruits on our trees to secure proper seed maturity."

G. A. Meckstroth, Willard, N. C.

Writing from the Coastal Plain Station on February 15th, he says: "The State Department of Agriculture estimates that the 1941 strawberry acreage in North Carolina will be 25 percent above that of last year. Last year 6,000 acres were harvested. In 1941 there will be about 7,500 acres, but this is 4 percent under the 1930 to 1939 average."

METALLIC PECTINATE FROM CITRUS PEEL

The Progressive Farmer (Texas edition) for March, quoted in the Department's "Daily Digest," says that construction is in progress on the $500,000 metallic pectinate plant at McAllen, Tex. Metallic pectinate is to be extracted from thousands of tons of grapefruit peel, most of which is now a troublesome waste at the 40 canning plants in the Valley. The chemical is used in the manufacture of medicines. Residue from the factory will be used as a fertilizer, admittedly a low grade.

BLENDED JUICES AND SYRUPS

The Fruit Products Journal, February, 1941, contains an article by W. V. Cruess of the Fruit Products Laboratory of the University of California, on "Blended Juices and Syrups."

In illustrating the phenomenal growth in popularity registered by canned and bottled fruit juices in recent years, Dr. Cruess says that during the last ten years canned tomato juice has developed from scratch (no pack at all, that is) to a pack in the neighborhood of 15,000,000 cases a year.

BLUEBERRIES

Leaflet 201, "Blueberries," by George M. Darrow, recently issued, emphasizes the increasing commercial importance of this fruit. The name "blueberry" as used in the Leaflet designates the group of plants, commonly called blueberries or huckleberries, that have many very small, soft seeds in contrast to the true huckleberries that have 10 large bony seeds. The seeds of the true huckleberry are objectionable in eating, whereas those of the blueberry are so small and soft that they are hardly noticed. The blueberries are wild fruits of increasing importance and six types or species are marketed extensively in different regions in the United States.

The most important commercially of these is the lowbush blueberry, Vaccinium angustifolium Aiton, native to the northeastern part of the United States and parts of Canada. The annual value of the fruit harvested, all from native plants growing in the wild, is probably more than five million dollars. The fruit is picked by hand for the fresh-fruit market, but for the canning trade it is gathered from the plants with a "rake" similar to but smaller than the cranberry scoop.

Other important types include the highbush blueberry native from southern Maine, westward to southern Michigan and southward to southern Georgia; the dryland blueberry or "low huckleberry," important in northern Alabama and Georgia, and northward to Maryland and West Virginia; the evergreen blueberry native along the Pacific coast from central California to British Columbia; the mountain blueberry of the Cascade Mountains of Oregon and Washington, and ranging eastward toward Wisconsin; and the rabbiteye blueberry native in southern Georgia and Alabama and in northern Florida.

About 12 varieties make up the cultivated plantings, and breeding work has already given us blueberries three times the size of the best wild berries.

RED SCALE INSECTS RESIST DEATH BY HOLDING BREATH

Science News Letter, February 22, says that the secret of resistance of certain red scale insects, among the most important of citrus pests, to drastic control measures used by citrus growers has been uncovered. Dr. Roderick Craig and Dr. N. W. Hardman, of the University of California, have found that shortly after resistant red scales are exposed to cyanide gas, they close two pairs of holes, called spiracles, through which the air enters their bodies. They can keep these holes closed for at least thirty minutes, time enough for at least 20 percent of the insects to escape death. Since practical control requires a kill of 98 percent to 99 percent, cyanide fumigation is useless for control of resistant red scales. At present, Drs. Craig and Hardman are attempting to find some substance which can be combined with cyanide to force the resistant scales to open their spiracles, thus allowing the gas to enter their bodies.

NUT INVESTIGATIONS

Felix S. Lagassé, Gainesville, Fla. (Tung investigations)

"An inventory of the known Aleurites montana trees in the State shows only 8 of any size, 4 of which produce mainly pistillate blossoms, and the remainder produce almost entirely staminate blossoms. Quite a few younger trees (from seed sent out by the Florida station in 1938) are scattered through various sections of the State. In colder sections, these were killed to the ground by the freeze of last November, but in the warmer areas they appear to have received only slight injury."

ADMINISTRATIVE NOTES

Delivery Records — Purchases Through Business Office.--In the past when field activities have sent to our Business Office orders for materials and supplies it has been the practice to send to the ordering office a copy of the requisition drawn here, this copy to be returned upon delivery of the items in order that the covering voucher can be forwarded for settlement. Hereafter two copies of the requisition will be sent to the field, one to be receipted on delivery of the shipment and promptly returned to our Business Office, the other to be filed with the records of the field office. Special attention should be given to orders bearing time discount, transmitting the notice of receipt by air mail if necessary to insure payment within the discount period.

Transportation of Household goods — In connection with official change of headquarters, where an employee's household effects are transported, to the new station under proper authority, the Comptroller has ruled that if the movement is "from some previous place of residence" other than his last duty station the maximum amount allowable for the transportation is the "cost of shipment by most economical route from the last official station to the new" based on the lowest published tariff rate or available contract rate, plus actual cost of packing and crating, but not to exceed actual cost of shipment from the previous place of residence to the new station.

Transportation Requests — We continue to have trouble over the failure of some of our travelers to send in promptly the carbon copies of the transportation requests used. These should be mailed when the requests are used as they are needed by the accounting officers in checking up the transportation company's bill. Sometimes a bill including hundreds of items is held up by the nonreceipt of such carbon copies. Your cooperation is needed--and expected!

NUT INVESTIGATIONS

Clifton W. Van Horn, Yuma, Ariz.

"Thus far this winter we have had fewer hours of temperatures of 45° F. or less than we had last year," he writes February 22d. "Up to the middle of February for our low elevation here at Yuma we have had about 520 hours while at the higher elevation of Safford we have had about 1,250 hours. Even though our weather is very mild now we can expect some additional chilling weather even here at Yuma. It is possible we might even equal last year but it looks doubtful.

"The question is, of course, are we going to have more severe delayed foliation on the pecans this spring or is it possible that with the increased number of cloudy days we have had and are still having that the actual bud temperatures have been below normal and our delayed foliation might be much less of a factor."

F. H. Dodge, Shreveport (Robson), La.

Writing from the U. S. Pecan Field Station on February 15th he reports: "The growth data show that there is an average of 802 shoots of 1940 growth per tree in the Bermuda plots, and 2,200 per tree in the cultivated plots. These data show even greater differences in numbers of 1940 shoots longer than 6 inches, which are the shoots that are the most fruitful. The trees in the Bermuda plots averaged only 65 of these per tree, while the cultivated trees had 713 of them. These data have been analyzed and the differences in numbers of shoots per tree are highly significant, which helps to explain the small yields of pecans from the Bermuda plots."

Rulon D. Lewis, Albany, Ga.

"There is a record breaking acreage of winter green-manure crops planted in Georgia this year, consisting of Austrian peas, Augusta, Hairy and Williamette Vetch, and oats and rye," he writes from the U. S. Pecan Laboratory on February 21st.

"The practice of checking the soil reaction and applying limestone, either calcium or dolomitic, where needed to bring the soil reaction up to pH 6-6.5, and then applying 300 to 400 pounds per acre of superphosphate at time the seed bed is prepared in the fall is giving some wonderful responses, as shown by the growth of winter green-manure crops at this time of year. It is my guess that growers using this practice in this section will produce some record breaking yields in growth of cover crops.

"Williamette Vetch planted in two of our pecan fertilizer experiments for the first time is showing up very favorably."

HANDLING, TRANSPORTATION AND STORAGE, AND MARKET DISEASE INVESTIGATIONS

Edwin Smith, Wenatchee, Wash.

Reporting on the attendance of Mr. A. L. Ryall and himself at a conference in Seattle February 13th and 14th with State and Federal research workers under the Western Cooperative Spray Project, he says:

"Experimental spray programs generally showed the ineffectiveness of nicotine-bentonite in a straight program for codling moth control in the Pacific Northwest. Genocide gave variable results, generally poorer than lead arsenate, although its effectiveness seemed to hinge upon the development of a suitable sticker. Micronized Phenothiazine gave outstanding results and seemed to show that previous variable results (from very good to poor) have been associated with the size of the particles. This spray did interfere with color development of the fruit.

"Tests of brands of lead arsenate carried on for several years by Gentner of Talent, Oreg. showed that one brand which had consistently given poor results during previous seasons was among the very best in 1940. The manufacturer was familiar with Gentner's previous results and in 1940 changed from an amorphus type to a crystalline type of material. Some of the brands which have been most effective during recent seasons have been of a crystalline type. Manufacturers have been giving a great deal of attention to the physical characteristics of their lead arsenate materials and to the stickers best adapted to their product during recent years.

"From the standpoint of residue removal it seems likely that the problem will become decreasingly acute because all research workers are giving up the quick-breaking oil emulsions commonly known as 'W.S.C. dynamite' or 'modified dynamite.' Even the W.S.C. station stated that they were through with it excepting possibly with two cover sprays of cryolite. With lead arsenate it has proven too difficult to handle and the deposits are too difficult to remove. It seemed as if they had 'wiped the slate' of the past program of experimental sprays and had gone back about ten years to start in again with lead arsenate and soap-type spreaders with possibly one or two ovicidal applications of 0.5 percent summer oil. Reports on the effectiveness of summer-oil sprays in keeping down Pacific mite (the old 'two-spot') probably will cause more than two oil sprays to be used in many orchards.

"Experimental results from combining dormant oil with lime-sulphur for San Jose scale indicate that the use of 1 percent oil and as little as 1:50 lime sulphur is more effective than normal strengths of either applied alone. The saving in cost will cause this to be used commercially to some extent this season.

HANDLING, TRANSPORTATION AND STORAGE, AND MARKET DISEASE INVESTIGATIONS

Edwin Smith (continued)

"The presence of pear psylla in North Central Washington will have some influence on dormant sprays. The insect has quite a foothold in the Entiat Valley and in Okanogan County, and has been found along Peshastin and Mission Creeks. The State and Federal Departments are cooperating to eradicate it. All produce from the infested areas is under quarantine. If a warehouse receives apples from an infested area all of the apples in the house are under quarantine and if shipped to points west of the Mississippi River the cars have to be fumigated with methyl bromide. The fruit has to be warmed up for fumigation.

"The eradication sprays consist of a 4 percent dormant oil spray and about four summer sprays of nicotine with mineral oil. The Federal Government is furnishing the spray material and supervising the spraying in infested orchards."

ADMINISTRATIVE NOTES

Franking Privilege From time to time questions have arisen as to the use of the franking privilege by United States Department of Agriculture clubs. A recent letter from the Post Office Department covers this: "It is understood these clubs are functioning at the instance and under the supervision of the Office of Personnel, United States Department of Agriculture," writes Third Assistant Postmaster General Ramsey S. Black to the Department's Office of Plant and Operations February 6, 1941, "and that correspondence, circulars, etc. relating to the activities of such clubs sent by officers of your Department in the performance of their official duties and in their names as such officers are transmissible free of postage in the penalty envelopes of the United States Department of Agriculture."

In accordance with this ruling and to identify fully such correspondence as official matter, officers of the United States Department of Agriculture Clubs should sign correspondence and circulars pertaining to these clubs with their full official titles as employees of the Department rather than merely as officers of the clubs. Official letterheads should always be used. If an employee desires to sign a communication or circular with his club title, this is permissible provided his official title as an employee of the Department is also included.

CORRECTION

In the discussion of purchase of supplies, page 59, paragraph 2, last line, News Letter for March 1, 1941, correct it in your copy to read: "...and may not be purchased without prior authority from the Bureau."

"RAISINING" OF MUSCAT GRAPES IN TRANSIT

There has perhaps been more controversy over changes in color and firmness of Alexandria (Muscat of Alexandria, known in the trade as "Muscat") grapes during transit than over similar changes in any other variety. In normal seasons grapes of this variety will attain a sugar content satisfactory for shipping before the eastern juice-grape market is ready to absorb any considerable volume. This forces growers either to pick the fruit for drying into commercial raisins or to allow it to remain on the vine until the market is receptive, knowing that some of the bunches will show various stages of drying when they are shipped. Buyers and receivers often complain of excess amounts of "raisined" or "raisining" berries when the fruit is delivered at the eastern market, contending that the number of grapes so affected increased during the transit period.

Circular 574, "Studies on the 'Raisining' of Alexandria (Muscat) Grapes in transit," by C. E. Asbury, C. O. Bratley and W. R. Barger reports on studies made to answer specifically the question whether or not the percentage of grapes classified as showing raisining could be expected to increase while in transit. Over a period of some three years, observations revealed that a condition involving both shriveling and the development of a brown color proceeded to some extent during a 10- to 14-day transit period in test shipments made from California to New York City, the increase in the percentage of grapes showing raisining ranging from 2.6 to 10.3 percent. Grapes that were shriveled or brown in color when shipped contributed the most to the increase of raisining in transit. Grapes that were green, yellow, or amber in color and not shriveled when shipped showed practically no raisining on arrival, though amber-colored grapes often became slightly brown.

THE IMPERIAL STRAINS OF LETTUCE

The Imperial strains of lettuce constitute an overwhelming proportion of the commercial crop in the United States. As a result there has been a constant and ever-increasing demand on the part of seedsmen, growers, plant breeders and others connected with the industry for more information about these strains. Circular 596, from the press in late February, attempts to supply this information: "The Imperial Strains of Lettuce," by the late Ivan C. Jagger, Thomas W. Whitaker, J. J. Uselman and Walter M. Owen. It brings together details of the development of these Imperial strains. Some of the strains listed no longer make up a very large portion of the total acreage of the crop, but all of them have been important at some time and have been used, or are being used, in crosses from which it is hoped to produce better disease-resistant and adapted strains than now grown.

OKRA

Circular 595, "The Growth and Composition of the Fruit of Okra in Relation to its Eating Quality," by C. W. Culpepper and H. H. Moon, reports on studies undertaken to determine the nature of certain chemical changes in the fruit of the okra plant as growth and ripening occur, correlating these with the rate of growth and eating quality of the material so far as possible.

Vol. 13 No. 6 March 15, 1941

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. XIII U. S. Horticultural Station, Beltsville, Md. No. 7
April 1, 1941.

USDA Clubs

A visitor to Washington, D. C. was being conducted about by a professional guide who was considerably annoyed by the tourist's patronizing manner. "I understand that Washington's school facilities are rather good," remarked the visitor, as they walked through the Department's grounds toward the New National Museum. "Oh, yes, indeed," agreed the guide, promptly. Then he indicated the Smithsonian building. "That's the Smithsonian Institution," he explained. "You know--just to educate the Smiths."

Well, the News Letter is an educational institution also. In the March 15th issue we mentioned casually that the Post Office Department has approved the use of the franking privilege by the Department's clubs. So what? So there comes an "Information, Please!" demand: What is an Agricultural Department Club? That's easy: The first one was started in 1920 when Mr. Edwin T. Meredith, then Secretary of Agriculture, was on a trip to the Pacific Coast. He was anxious to learn more about Department activities in that area but found considerable difficulty in bringing together representatives of the field offices. Personnel of bureaus with offices in the same city were not acquainted with each other! As an immediate result of a suggestion by Mr. Meredith, the first of these clubs, usually called USDA clubs, was organized in San Francisco. Shortly after similar clubs were formed in Portland, Oreg., Denver, Colo. and Albuquerque, N. Mex. Others followed in succeeding years until the total reached 29, including one in Puerto Rico. Then for one reason or another there came a relapse. By 1939 only half-a-dozen of the clubs showed signs of vigorous life. The Office of Personnel brought out its pulmotor! The revitalizing program has been so successful that there are now 75 clubs, all demonstrating their value as a means of stimulating correlated effort and thought in the field.

"One of the important administrative objectives of the Department today, emphasized by the immediate need for national defense, is to develop in its employees a feeling of purposeful unity, the realization that all of our activities are part of one permanent Agricultural Program," said Secretary Wickard in a memorandum concerning these clubs, dated December 9, 1940. "At times some employees, in their enthusiasm for their work, may overlook the fact that a particular division or activity is directly related to the broader objectives of the major program.

"A member of the public who desires information or service related to our official functions may consider it very logical to inquire at the nearest office of the Department, whether or not it is the exact office for his need. The public knows little of bureau lines within the structure of the Department. Unfortunate incidents not only bring discredit to a particular bureau; they injure the good reputation of the Department of Agriculture as a whole. It therefore becomes the duty of every employee to become reasonably acquainted with the broad phases of the work of the Department as a whole, so that he may the better discharge his duties as a public servant.

"Roughly, one-seventh of the employees of the Department of Agriculture have their headquarters in Washington, D. C. Their opportunities for acquiring a broad knowledge of the Department's work, for engaging in frequent inter-bureau consultation and for personal improvement are very favorable because of their numbers and their physical proximity. But it is in the field, in hundreds of places where we have offices, where the end results of our efforts must take effect, that the need for creating a sense of unity is most necessary. One step in this direction--a new development of an old idea--is the organization in major centers of Departmental activities of some 75 United States Department of Agriculture clubs, commonly called USDA clubs. There is room for 200 more.

"USDA clubs are informal groups of employees of the Department of Agriculture in the field, representing several bureaus in the same locality, who are interested in meeting regularly in order to acquire a knowledge of the broader aspects of Department work, to discuss and correlate ideas of mutual interest, and to develop closer acquaintanceship and better working relationships. To a considerable degree they can thus provide some of the advantages of centralized location.

"Their objectives are briefly as follows: (1) Provide a channel whereby the Department's many activities may be informally correlated in behalf of the best possible service to the public; (2) stimulate an increasing knowledge of the work of the Department as a whole among employees; (3) assist through personal contact in the interpretation

to the public of the Department's services; (4) stimulate training and education among employees; (5) develop personal acquaintence among employees of the Department in club areas; and (6) promote employee welfare.

"Membership in the USDA clubs is usually open to all employees of the Department in a locality, including agents and collaborators. The clubs may also elect to associate or honorary membership any others they may desire.

"The USDA clubs do not attempt to supersede any of the established functions of agencies of the Department, nor do the individual members use the clubs as a means for taking actions which they could not undertake as members of their bureaus.

"The clubs are not to be confused with Federal Business Associations, which may exist in some cities. These Associations are composed of the heads of all Federal government establishments in a particular city. Their objectives are more limited and quite dissimilar to those of the USDA clubs.

"A universal desire of the clubs is to receive special visitors from Washington and other parts of the country. This is an excellent means of disseminating new information and introducing new points of view to groups of employees. Officials who have occasion to travel should try to arrange to attend USDA club meetings. I know from personal experience that they will find it very profitable.

"With the stimulation of group action and inter-bureau consultation by the clubs it is natural to expect that administrative personnel will discover ways for effecting new economies in business operation. The clubs may be of assistance in helping new offices to become established in their communities. It is remarkable how many things can be more easily accomplished under such informal auspices. I am sure the clubs will welcome helpful suggestions and the opportunity to be of some particular service to a bureau.

"Coordination is often a popular first suggestion whenever the problems of management become complex. But coordination is often an unpopular course to those directly affected. Herein lies one of the main values of the USDA clubs. They can bring programs into cordial relationships in the field, where the effort is most important, a much more effective way than imposed coordination.

"I should like to see some positive forms of cooperation given the USDA clubs so that they can become a really effective means of developing purposeful unity."

SUBTROPICAL FRUIT INVESTIGATIONS

W. W. Aldrich, Indio, Calif.

"December, January and February of this winter have been unusually rainy," he writes March 4th. "In the orange and lemon groves of the coastal, intermediate and interior areas picking has been seriously delayed. Not only have growers been unable to fill their prorate quotas, but in many cases the delay in picking has allowed an increased proportion of fruit to reach advanced maturity. The Washington Navel oranges have been developing 'water spot,' a breakdown of the rind caused by prolonged rainy periods. This has thus far been more serious on oil-sprayed than on fumigated trees. With continued wet conditions blue and green molds are invading the water-injured areas of fruits either on the trees or in packed boxes. Since careful grading fails to remove all 'water-spotted' fruits, shipment to eastern markets is generally considered unwise. Furthermore, in some locations Navels are dropped badly. Fortunately, several weeks ago Furr and Reeve took advantage of a sunny Sunday and harvested fruit in their Washington Navel irrigation plots in a grove whose owner now reports the loss of half his crop.

"At Indio we have had from 7 to 10 rainy days in each of the last three months, and there has been rain on each of the first four days in March. Last week Deglet Noor date palms had 2 or 3 inflorescences out. Growers fear that much of the pollen applied may have been washed off. With continued rain expected, a number of growers are now putting paper bags over inflorescences after pollination. Crawford, who is studying the cross compatability of 36 different males with Khadrawy and Dayri, has been bagging to prevent wind pollination; and therefore does not expect the rain to affect his results. Young has nearly completed carbohydrate analyses of our palm samples, which show in lower trunk storage of carbohydrate reserves which are appreciably depleted during the late summer, when rapid sugar accumulation occurs in the fruit. Moore measured palm leaf elongation all winter, and found no 2-day period when leaves did not make at least 25 percent as much growth as in summer."

ELECTRIC SOIL STERILIZATION

Farm Journal and Farmer's Wife, March, says that A. G. Newhall, of Cornell University, has been conducting tests on the use of electricity in soil sterilization. In reporting the results Mr. Newhall lists these advantages of electricity over other methods: (1) Heat is universally effective against practically all the pests commonly found in soil; (2) Electricity is becoming more available at rates that are increasingly inviting; and (3) Where climate is too mild to warrant steam heating equipment, electricity is a logical substitute as a source of power for heat.

TOMATOES RESISTANT TO FUSARIUM WILT

Once upon a time there was a man who declared that if he ever married he would be the boss of his house or know the reason why. Well, he did get married, and he isn't the boss of his house. Also, he knows the reason why! Knowing the reason why is not apt to prove of any help in his case, but it's an entirely different matter when we discover the reason why in the case of fusarium wilt of tomatoes, for example. We can do something about it--and we have done something about it.

The growing of tomatoes for market and industrial purposes has become one of the major vegetable-crop enterprises in the United States. BUT fusarium wilt is making the growing of susceptible tomato varieties more and more hazardous and even prevents the commercial growing of such varieties in many localities. A beacon light of hope in this situation is supplied by Circular No. 584, "Development of Interspecific Tomato Hybrids of Horticultural Value and Highly Resistant to Fusarium Wilt," by William S. Porte and Frederick L. Wellman. Though hybridizing, backcrossing and selection they have succeeded in producing a number of lines of horticulturally acceptable, highly wilt-resistant tomatoes. These are being further developed by selection in widely different localities in the United States. Interesting, too, is what the circular has to say of the special techniques of breeding and testing for disease resistance, and the method of rating comparative wilt resistance in the various hybrids tested.

SEASONAL CHANGES IN FLORIDA ORANGES

Technical Bulletin No. 753, "Seasonal Changes in Florida Oranges," by Paul L. Harding, J. R. Winston and D. F. Fisher describes a series of studies undertaken to ascertain the changes that occur in different varieties of oranges as they mature and ripen on the tree, and the influence of various factors known to affect the eating quality and food value of the fruit. The authors believe that a more desirable maturity standard for oranges could be obtained by the adoption of an adequate standard based on a minimum total-solids content and a maximum as well as a minimum total-acid content.

THE RELATION OF FIRMNESS TO RIPENESS OF EASTERN GROWN APPLES

As apples ripen they generally become softer and it has been found that each stage of ripeness is represented by a fairly definite range of firmness. The pressure-test range for each degree of ripeness varies somewhat among the different sorts, a variation clearly shown by a series of graphs included in Technical Bulletin 579, "The Relation of Firmness to Ripeness of Eastern-Grown Apples," by M. H. Haller, J. M. Lutz and E. D. Mallison. This bulletin reports on studies of from one to three pickings of 16 varieties of apples made during three seasons and stored at 70°, 36° and 32°F.

NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

Writing from the U. S. Pecan Field Station and Laboratory on March 1st he reports: "This year the meetings of the Southeastern Pecan Growers' Association were extended to cover two days and the success of this change was evident. As many as 125 were present at various sessions, and the total number in attendance probably approached the 200 mark. More than the usual number of educational and experimental institutions were represented, and a large number of very good papers were presented. The growers who attended were apparently sincerely interested in the phases of pecan growing discussed. From my personal standpoint it was one of the best meetings I have attended, not only because of the excellent program, but also because of the opportunity to discuss individual problems with many growers and other investigators."

Rulon D. Lewis, Albany, Ga. (Soil fertility) March 15th

"In orchards at Cairo, Ga. where they have used an ammonium sulphate as the source of nitrogen for a period of eight years, we found the soil to vary in reaction from pH 5.8 to 4.9, and the lime requirement to vary from 1/2 to 3 tons per acre, and correspondingly poor winter legume crops growing."

F. N. Dodge, Shreveport (Robson), La.

"After studying notes from the five past seasons on the time of breaking of bud scale of pecans, it appears that this will be another late season unless we get a lot of warm weather soon," he prophesies March 8th.

John H. Painter, Cairo, Ga. (Tung investigations)

"It now appears that tung will not blossom any earlier this year than last, the first week in April. A few pear trees have blossomed."

George M. Bahrt, Fairhope, Ala.

Writing from the U. S. Field Laboratory for Tung Investigations on March 15th, he says: "Among the shrubs and trees in bloom here are pear, peach, several species of prunus and quercus, Cliftonia monophylla, Acer rubrum, and Cercis canadensis."

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"An examination of fruit trees in our experimental blocks shows the trees still dormant," he reports March 8th. "In fact all indications point to a late spring. Even the buds of shrubs such as Spirea have made no advance."

DECIDUOUS FRUIT INVESTIGATIONS

M. A. Smith, Columbia, Mo.

Writing from the Fruit Disease Field Laboratory on March 6th he says: "We have just been informed that to date prospects are good for a crop of apples, peaches, plums, cherries, strawberries and grapes in the vicinity of Mountain Grove and in other points in souther Missouri. There was slight injury to peach wood on those trees between the ages of two and five. There was also some injury to sweet cherry buds.

"The Department of Horticulture in a recent report stated that the condition of all fruits from Columbia north to the Iowa line and extending east and west to both rivers continues to be serious. The removal of orchards in this area at this time is being discouraged and growers are urged to wait until spring in order to obtain a more definite idea as to the extent of the damage."

J. R. Kienholz, Hood River, Oreg.

"A meeting with the Dalles growers was held February 4, at which time County Agent Lawrence had Mr. Childs, Mr. O. T. McWhorter and myself discussed some of the orchard problems with them," he writes February 28th. "They seem considerably concerned about their stone fruit problems in general, and the new peach virus disease in particular. Some improvement in their orchard conditions is expected this year since they have had a greater winter rainfall than usual.

"Pear twig scab pustules were open by February 20. This is estimated to be about one month ahead of the time the delayed dormant lime sulphur spray will be due. Practically all of the pustules are appearing at the terminal six inches of growth, and this indicates infection of the twigs occurred relatively late in the summer of last year. It also reaffirms our statement that for our district the timing of the first spray should coincide with host development rather than the maturity of the ascospores on overwintering leaf material. We are planning to carry on a more complete series of dormant spray tests against the twig pustules since our results of last year showed some interesting developments.

"Mr. Childs and I helped plan a series of tests with apples and pears for use with a new artificial waxing procedure developed in the past few years. An experimental machine was available to the Apple Growers' Association which is a refinement of the old Brogdex process equipment. Some success against fruit rotting and a better keeping quality have been reported, and since there has been some difficulty with certain lots of fruit here from both these angles, a small scale trial was considered desirable. The wax is obtained from the tropical palm tree. Washington State College has reported that the wax has an actual chemical fungicidal property besides the physical effect expected."

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"Peach blossoms developed very little during last week and it appears that Hiley trees in this section will not be in full bloom for at least another ten days," he writes March 17th. (Dr. Cullinan notes that peaches were in full bloom at Fort Valley on March 25, 1940.) "Early Rose flower buds have advanced very little from the dormant stage--their blossoming season is almost certain to extend into April.

"About 200 peach seedlings from last year's crosses, which had been germinated on sterile agar last summer, were transplanted to the field last week. They are now 2 to 3 feet tall and have retained a few leaves, ready to start growth with warm weather. Another 250 seedlings of similar origin will be planted this week.

"Preliminary observations on the effect of dormancy-breaking sprays under field conditions this season show that they have been effective in spite of the late cold weather. Stimulation of Hiley, Elberta and Early Rose buds according to time of application has occurred just as anticipated from results obtained in previous years. The less chilling a variety needs to break the rest period, the earlier the sprays should be applied for greatest effectiveness. Two young Hiley trees at the laboratory sprayed with DNO on December 16th are now in 20 percent full bloom, while buds on check trees are mostly in the green and early pink stages."

N. H. Loomis, Meridian, Miss.

"A few ripe strawberries were picked but these were berries that managed to escape the frosts and freezes," he writes from the U. S. Horticultural Field Station March 1st. "The winter bloom has been unusually heavy on the strawberries this winter, and practically all have been killed."

E. S. Degman, Medford, Oreg.

Writing from the U.S. Pear Field Station on March 6th he says: "April 10 is considered to be the normal bloom date for pears in the Rogue River Valley. Last year they were in full bloom by April 1. At the present time they are about 10 days ahead of last year. This could mean a frosty spring.

"In the past there has been a definite correlation between the number of blossoms per tree and yield. This year we have the heaviest Anjou bloom on record with nearly twice as many as last year. All varieties with the exception of Bosc have a heavy bloom this year."

YOU'RE IN THE PUBLIC SERVICE

Every four years we public employees are exposed to a barrage of words like "bureaucracy" and "irresponsibility," and reproached with phrases of unpleasant connotation. This experience is not without wholesome effect, for it reminds us, as public servants, of the obligations we have to the public we serve. But how many of us, from day to day, make a practice of evaluating the contributions we are making to good public service?

It has been estimated that Department representatives in local areas throughout the United States deal with a million people a day. Most farmers know the Department only through the representatives with whom they deal in their local communities. If a farmer has confidence in these representatives, then he is inclined to have confidence in the entire program. An interested, courteous, well-informed employee will merit the respect and good will of all citizens with whom he deals. He will influence greatly the attitude of a community toward the program and may thus contribute much to its success.

In a democracy there is no place for the civil servant who can not recognize what his real boss looks like. His real boss is not his superior or the chief of his bureau. His real boss is the American people, represented perhaps by the impatient man sitting in the front office drumming his fingers on the desk while he waits. This boss may not always be impressive in appearance. Since he is generally a man who works with his hands--a plain American citizen--his clothes may be soiled, his fingernails dirty, and his hair uncombed. He is eager to be on with his work and the impatient way he squirms in his chair may make you nervous. He's your boss, this man, and he may be a tougher one than the man you think you work for. He's sensitive and at times appears to be unreasonable. You may have a good program, an efficient organization, a good line of talk and some readable publications, but if you or your supervisor cannot serve his needs he may want to fire you and your whole outfit. He has work to do and he wants to be on with it.

He may be prejudiced against you from the start. He's heard a lot of things about Government employees and naturally he believes many of them. He suspects that you spend too much time gallivanting around the country. He has seen abuse of his property, especially the Government car bought with his taxes. Sometimes he thinks you act self-important, put on airs, and generally give evidence of having forgotten that you are merely a small instrument in this Government of, by, and for the people.

Even the place where this man is waiting has something to do with the impressions he is forming of you before you meet. Is the room reasonably clean and orderly? Is it dignified without being pretentious? If you are interested in these impressions, you will have some simple maps

or photographs on the walls. The visual and photographic material supplied by the Department is among the best in the country. Is there reading material available? An attractive and non-technical pamphlet or two on the work of your bureau or your Department should be on a table. For instance, the Departmental publication, Planning for a Permanent Agriculture, would serve to interpret to your boss some of the long-range objectives to which your own work is contributing.

But the relationships with your boss in the office are but a few of the many that you have. What "telephone manner" do you, your supervisors, and your secretaries have? A few impatient words over a telephone may destroy more trust and confidence than you can build in a year. What sort of impression do you make in your speeches? Too many representatives carry the jargon of their bureau or profession into their talks before groups; many others use unpleasant words or phrases that might be more tactfully put, or translated into more acceptable terminology. The speaker should seek always to make himself understood without "talking down." He should speak with the attitude of one who is reporting to a superior who is not possessed of the same technical training as the speaker.

These small day-to-day evaluations of your work for your boss--the American people--will serve to remind you of the attitude which must be reflected in your behavior. And in evaluating your work, if you will think of the plain citizen who comes to see you, or whom you go to see, as your employer, your attitude toward him and his attitude toward you will be more improved than if you think of him as an economic abstraction, a political difficulty, an annoying problem or, a plain pest. If you prove to your citizen-boss that you are friendly and willing to serve, you will find his attitude toward you changing. This is not superficial courtesy or "glad-handing"; it is a reflection of a genuine sense of obligation toward the public, a feeling that this man is paying you to help solve his problems, that his problems are your problems.

In sum, begin to make a day-to-day audit of your basic psychological attitudes toward the people with whom you deal. It takes more than efficient organization and technically trained personnel to produce acceptable results. The task of the Department of Agriculture looms large in the economy of our nation. To be continuously successful in discharging our job we must obtain the highest degree of public cooperation. Let us remember that the aim of our Government is to serve the people, and that this aim in our Department may be most effectively achieved if we nurture the concept that administration must be fundamentally a democratic process.

---Roy F. Hendrickson,
Director of Personnel, USDA.

ADMINISTRATIVE NOTES

Single-Subject Letters

Brevity may be the soul of wit, but it is sometimes carried to an unwise extreme--as in the case of the warrant officer whose duty it was, taking part in church service, to give out the hymns. The congregation was startled to hear him call out in a loud voice: "Hymn Number two-double-o-seven: 'Art thou weary; ditto languid; ditto sore distressed!'"

If you would like to see persons who are weary, languid and sore distressed, you might visit our file room sometime when there are a lot of letters to be indexed and filed, most of them containing references to half-a-dozen different matters! How to file 'em! You may think that this doesn't concern you, but ponder just what a many-subject letter may mean in the way of delay when it has to be sent to several different sections to be noted, held for action, copied, etc. One section of our Business Office, for example, handles everything pertaining to letters of authorization and vouchers charged thereto, transportation requests, monthly financial statements, etc. Another takes care of purchases and supplies. A third has responsibility for matters of personnel. There is an inventory section; and another that looks after leases, rental contracts, field activities and Compensation Commission cases. To limit yourself to a single subject in each letter requires a bit more time on your part--but this is more than offset by the promptness with which the request can be handled here.

You should see the smile that lights up the face of Mr. Gould when he takes up his appalling volume of correspondence and observes three or four letters from the same station, bearing the same date, each referring to but a single subject--so that all he needs do is pass them along at once to the section concerned for attention! Of course, you could handle the situation by making extra carbon copies, but all in all, the policy of holding letters to a single subject makes for prompter action on your requests.

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Informal Contracts

Attention is again called to the fact that informal rental agreements must be obtained for all services other than personal, such as rental of garage space, experimental plots, equipment, greenhouse and cold storage space, and laundry service, garbage disposal, and ice, that extend regularly over a period of more than six months. However, where the annual rental exceeds the rate of $50 per annum, competition must be secured. Instructions relative to procedure in the matter of competition should be procured from the Business Office before any action is taken.

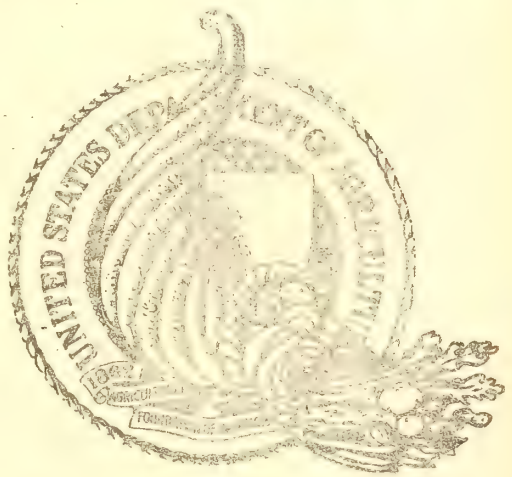
Now is the time to begin making a careful survey of all your rental needs for the fiscal year 1942, in order that all contracts may be submitted for approval and completion not later than June 1, 1941. Forms and instructions for the preparation thereof will be distributed by April 1. If you have not received yours, notify the Business Office at once.

Vol. 13 No. 7 April 1, 1941

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R.

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

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Vol. XIII U. S. Horticultural Station, Beltsville, Md. No. 8
April 15, 1941.

Air-Express Shipments. We get into some very unusual and interesting situations in our transportation investigations. One of the most interesting was in connection with a recent request from the Railway Express Agency that we investigate the trouble encountered in the transportation of gardenias, sweet peas, orchids and other flowers by air express from California to New York. Some of the shipments had arrived in a damaged condition, the flowers showing a brown discoloration of the petals, the nature of which might be due either to freezing or overheating in transit; or possibly as a result of changes in atmospheric pressure due to being carried at different altitudes.

When Mr. Fisher was in San Francisco recently, arrangements were completed for a test flight of several hours' duration, to be accompanied by Messrs. Pentzer and Barger of our laboratory at Fresno, Calif. They were provided with thermocouples, recording thermometers, and other instruments for obtaining necessary data in the various compartments in which express shipments are carried. Following the completion of the test, Mr. Pentzer wrote Mr. Fisher:

"Mr. Barger and I wish to submit for the records what we believe was the first air-transportation test conducted by the Department. Riding freight trains across the country has been one of our summer pastimes and upon occasions we have 'tested' by truck and by boat. However, the probability of being asked to read thermocouples and resistance thermometers while flying through the air at elevations of 20,000 to 25,000 feet had never occurred to us. Nevertheless, that is what we found ourselves doing on Friday, March 14, 1941.

"We left the Oakland airport in a United Air Lines "Mainliner' plane with test packages of flowers in the four freight compartments. Some were held in the cabin to observe the effects of rapid ascent and descent on the packages.

"We made a circle out over the bay and then headed east toward the Sierras, climbing rapidly as we did so. When we had reached an elevation of about 15,000 feet we were all handed oxygen tubes by the stewardess and told to use them. Long before we reached this elevation some of the tightly sealed cellophane packages used for orchids and gardenias had expanded until they resembled balloons.

"We continued to climb until we had reached an elevation of 25,500 feet. From this elevation the Sierras no longer looked steep, but appeared as rolling, snow covered hills a long way below us, and Lake Tahoe seemed to be about the size of a mill pond. At this elevation the outside temperature was 48° below zero. After flying for some time at 20,000 feet or above, we began a rapid descent, dropping at a rate of about 2,000 feet per minute, reaching a speed of 330 miles per hour. As we descended, the tight cellophane packages collapsed, in some cases to such an extent that the petals of the flowers were injured. Some test packages provided with vents to allow rapid equalization of inside and outside pressure held their shape very well.

"We landed at Reno after a 2 hour flight from Oakland and after eating lunch, took the flowers for another ride over Tahoe, Virginia City, Carson City and Yosemite, and then to Oakland. Despite exposure of 2 to 3 hours at sub-freezing outside temperatures, flowers were not damaged in the unheated rear compartment of the plane, and the temperatures in the packages indicated that with a few modifications this compartment could be used for transportation of flowers. The heated forward compartments were somewhat too warm at times to be ideal for flower transportation.

"While most of the flowers used in the test were gardenias, since these are shipped by air express in greatest quantities, some 20,000 blooms having been shipped during the winter months from San Francisco to Chicago and New York, other flowers were likewise included to observe their reaction to such large and sudden changes in pressure. Roses, orchids, snapdragons, bouvardia, anemones, ranunculas, violets, etc. did not show any ill effects. The very thin edges of sweet pea blossoms appeared to be somewhat frayed upon examination the day after the test.

"There has been a request made to lower the air express rates from the present rate of 96 cents per pound to 60 cents. If this rate is granted, it is predicted that air express will be used for shipments of roses and many California grown flowers other than orchids and gardenias."

AN EXAMPLE OF USEFUL RESEARCH

In its issue of March 28, 1941, the CITRUS GROWER of Orlando, Fla., discussing the effectiveness of research programs, pays a nice editorial compliment to our efforts in that direction.

"A fine example of research in the public interest and in the special interest of Florida growers comes to us fresh from the press of the United States Government Printing Office," it says. "It is Technical Bulletin No. 753, 'Seasonal Changes in Florida Oranges,' by Paul L. Harding, associate horticulturist; J. R. Winston, senior horticulturist; and D. F. Fisher, principal horticulturist, Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture. It tells us a lot that we should know as growers about the fruit we produce, and very little of it is too technical for the veriest tyro to understand.

"At the last year's Horticultural Society meeting, Dr. Harding gave a splendid and thought-provoking advance summary of this bulletin that started some new trains of thought in the composite citrus industry mind (if there is such a thing), the effects of which have already been far-reaching.

"It is an education in varietal characteristics. It helps also to an understanding of consumer reaction to our offerings, of our own marketing habits, and of the relation between these two factors."

NUT INVESTIGATIONS

Felix S. Lagassé, Gainesville, Fla. (Tung investigations)

"Mr. Ammen and Mr. Fisher have made a follow-up of Mr. Ammen's thesis study at Cornell as applied to tung trees, with most promising results. In Mr. Ammen's previous work he had shown that corn selections showing hybrid vigor contained heavier embryo axes than either parent. It was considered possible therefore that a positive correlation coefficient might be found also to exist between the yield of individual tung trees and the dry weights of their respective embryo axes. Twenty-four trees were selected to cover a range of yield from high to low. Approximately 100 embryo axes from each of the trees selected were dried and individually weighed. A statistical analysis of the 25 trees shows that the correlation coefficient from pairing mean embryo axis weights and yields of 'hulled, air-dried seed' was .67. The average mean of the embryo axis weights of the 11 higher yielding trees was significantly greater than that of the 11 lower yielding trees according to Student's t. Also a statistical analysis shows that the variation in embryo axis weights of the higher yielding trees was significantly less than that of the lower yielding trees."

NUT INVESTIGATIONS

George F. Potter, Bogalusa, La. (Tung investigations)

"During this period the weather has continued cold and somewhat rainy," he writes for the March 3-22 period. "Growers are complaining that their Irish potatoes are only breaking the ground when they should have 5 or 6 inches of vines. However, tung growers are in high spirits. It now appears certain that the trees will not blossom until about April 1 and frost injury is not likely to occur after that date. Of course, it is a little early yet to be 'counting chickens,' but the chances are good for another crop in 1941. This will be of considerable scientific interest in that it will be possible to study the effect of two successive crops on the trees and on the filling of the nuts.

"We have had warm weather this winter but it came at just the right time; namely, in late November and December. The trees were then in a deep rest and only the youngest trees, such as nursery stock, made any appreciable growth response. If the warm weather we had in November and December had occurred in January or February, it would have forced the trees into bloom and no doubt the crop would have already been lost.

"Planting of trees on the Cooperative Farm in Pearl River County, Miss. has been in full swing but there is still a considerable acreage to be set. Plots have been established for soil management studies, fertilizer placement with newly set trees, a very extensive test of budded clones and a test involving pruning and shaping of tung trees of different clones at three levels of fertility.

"A second similar test has been set up on the farm of a private cooperator in Louisiana. Nurseries have been planted for use in a number of experiments. Mr. Merrill has set up a test involving a trial of different seed storage conditions. In another block, 18 fertilizer treatments are being tried. In still another 32 treatments with 'less common' or micro-elements are being used as supplements to ordinary mixed fertilizer.

"Dr. Fernholz has planted seed with 24 different fertilizer treatments for use in his hardiness studies next fall. The loss of our budwood during the cold weather last November means that he will have to work with seedlings this coming winter. He has planted the seed for trees to be budded next August and September for use in the experimental work in the winter of 1942-43."

NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

Writing from the U. S. Pecan Field Station and Laboratory on March 15th he said: "The cover crops in our experimental plots are generally above the average in stand and growth this year and the condition of all cover crops in this section is also above the average. Austrian winter peas in some orchards are showing the effects of disease and considerable loss may occur. Willamette vetch continues to appear very promising and Augusta vetch is also very good. Of course, both of these vetches are found only in scattered plantings. Rye has been heading irregularly for several weeks but is generally just beginning to form heads in quantity."

B. G. Sitton, Shreveport, La.

"All vegetation seems to be greatly delayed this season," he reports under date of March 15th. "There has been more cold, cloudy and rainy weather than usual. Peach and pear trees are just coming into full bloom. Japanese quince has bloomed very irregularly this year; never in full bloom. The azaleas are usually a profusion of bloom at this time of year but at present only a few of the earlier varieties are showing bloom and they are not the showy masses that usually prevail. Even the bulbous flowers such as the narcissus and daffodil have not bloomed as freely as usual."

F. N. Dodge, Shreveport (Robson), La.

"The first extensive swelling of pecan buds was observed on the station this week," he writes from the U. S. Pecan Field Station on March 22d. "This is one week later than the latest previous observation in the past five years. Cover crops have made considerable growth in the past few weeks, but are still far behind the usual growth because of the late start last fall which was due to a late drought. Rye is beginning to head even though it has made little growth."

Clifton W. Van Horn, Yuma, Ariz.

"As a result of our dormant spray treatments we now have Humble, Halbert, Mahan, Burkett and Schley pecan varieties breaking buds and starting growth," he reported March 15th. "Only in the case of the Humble are non-treated trees showing any indication of starting growth. The treated Humble trees are more advanced than the other varieties. The Success variety alone has not yet shown any response from dormant sprays. These observations seem to indicate that the dormant spray, particularly the repeated application of the DNO, tends to hasten the activity of the different varieties in about the same order that they start growth normally under our Yuma conditions for this season."

USING TOOTHPICKS IN TRANSPLANTING PECAN TREES !

This is a skeptical age, so you will not be surprised to learn of our hesitation in accepting at face value a newspaper headline announcing: "Fruits and Vegetables Talk Over the Radio." We were willing to concede that research specialists have made phenomenal improvements in fruits and vegetables, but we could not bring ourselves to believe that any variety has as yet reached the stage where it can speak for itself, over the radio or elsewhere. We were right, of course; the talk was about fruits and vegetables, not by them.

Under the circumstances, then, we may be pardoned for looking with suspicion at the announcement that toothpicks were being used in transplanting pecan trees. This time, however, we are wrong; the thing can be, has been, and is being done. A Department press release, discussing work by our colleagues L. D. Romberg and C. L. Smith, tells all about it. The toothpicks are the ordinary round kind and to prepare them for the job they are soaked in a solution of indole-3-butyric acid, one of the so-called growth-promoting substances.

However, the part played by the toothpicks may not be exactly what you are thinking: Their role is merely to put the growth substance in contact with the roots that have been cut. So you can drop any idea you may have had that Romberg and Smith were lifting pecan trees from here to there with toothpicks though, personally, I wouldn't put that past either of them. Those boys really are clever when it comes to handling pecan trees.

"Pecan growers have had trouble with transplanted pecan trees in that a rather high percentage of them die the first year in the orchard because the roots do not make enough new growth to support the top," says the release, given to the newspapers April 6, 1941. "Working on this problem, L. D. Romberg and C. L. Smith of the Bureau of Plant Industry recalled that treatment of pecan cuttings stimulated new root formation. In Texas orchards they experimented to find out whether established roots would respond to similar treatment.

"After experience with several methods, they found that the most practical and effective way of applying the chemical was to bore a small hole through the roots and then plug this hole with a toothpick that had absorbed a dose of the chemical. Treated roots produced more new roots and made much more rapid growth than untreated roots. Tops survived the critical first season. The Department does not yet have information as to whether similar treatment will prove effective with other trees that are difficult to transplant, but regards the possibility as well worth investigation."

So, in addition to the other ways in which we have been forced to coddle fruits and vegetables to keep them on their good behavior, we now find ourselves facing the possibility of having to tell growers it is advisable for them to lay in a supply of toothpicks for their trees!

DECIDUOUS FRUIT INVESTIGATIONS

Lee M. Hutchins, Brownwood, Tex. (Fruit Tree Virus Diseases)

"A heavy sleet formed at Brownwood the night of March 17th. Hileys were in beautiful full bloom in our nurseries. The morning of the 18th we saw a gorgeous sight. The trees were completely covered with clear ice and the showy flowers presented a striking and most unusual appearance. The ice melted slowly during the day and was gone entirely by the following morning. To our surprise, there was no petal fall on account of the sleet. Neither was there any killing of the ovaries that we could discover. The petals were not injured. The thermometer stood at 30°F. from noon on the 17th to 10 o'clock on the morning of the 18th, then the temperature began to rise slowly."

C. P. Harley, Wenatchee, Wash.

"It is very apparent that the 1941 growing season will be a repetition of last year," he writes March 26th. "As it appears now, full bloom in apples will probably be about April 15th, indicating another long growing season with all of its attending ills. Our late winter and early spring precipitation has been extremely light and in some areas will likely result in some water shortages before the summer is over...

"More and more interest is being shown by growers in the use of sprays to remove the crop. Many intend to destroy the crop entirely, while others are contemplating the use of tar oil to prevent set on light blooming trees, especially on biennial bearing varieties. With the high cost of codling moth control sprays it is more economical to forego the attempt to produce a light crop. Last year many of the Canadian growers found that fruit from light-set Yellow Newtown trees was almost a complete loss because of bitter pit. Many will correct this situation by the use of tar oil this year. As land values have been materially reduced, it appears logical to consider production on a per-tree basis rather than per-acre.

"Now that the new State law requring fruit trees to be sprayed or removed is in effect, the complexion of the Wenatchee district has changed considerably. Quite a large acreage of apple trees has already been pushed over, and many more will be in the near future. The majority of these orchards that are removed are of course marginal or submarginal, but in some cases their removal of probably due to marginal growers rather than marginal trees.

"We were extremely fortunate in having three days of soaking rain following our fertilizer applications. Since that time we have not had a drop of rain. Had we missed that date when our fertilizer was applied we would certainly have been out of luck this year in our nitrogen studies."

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"Buds of the peach and plum trees in our experimental blocks at Ruppel Bros. are just beginning to swell, but if the spring-like weather continues they will probably make very rapid progress during the coming week," he writes March 22d. "Apple buds show little or no development so far.

"The first bacterial spot inoculation experiment, using the new electrical control for atomizing the inoculating chamber at definite intervals, has given successful results."

CHANGE IN DISTRICT OF COLUMBIA OFFICE HOURS

Circular No. 108 issued from the Department's Office of Personnel on March 21st, announces: "On March 19, 1941, the Director of the Bureau of the Budget notified the Department in Circular No. 371, that in order to alleviate the increasingly serious traffic congestion in the District of Columbia and to provide for a more effective operation of the functions of the Government, the President has directed that, effective March 31, 1941, the official working hours of the bureaus and offices of the Department of Agriculture in the District shall be as follows:

Bureau or Office	Beginning time	Closing Time Monday to Friday	Saturday	Lunch Period
All except Farm Credit Administration	8:15 a.m.	3:45 p.m.	12:15 p.m.	30 min.
Farm Credit Admin.	9:00 a.m.	4:45 p.m.	1:00 p.m.	45 min.

"This should not be considered as preventing the establishment (1) of hours of duty differing from those in the schedule for employees (such as messengers or mail clerks) performing duties requiring that their working hours be different from the regular hours of the Department or (2) of night shifts where they have been determined to be necessary. After March 31, 1941, any bureau or office desiring to alter these working hours shall submit its recommendation to the Director of Personnel for consideration by the Secretary, who will, upon approval, submit the proposal to the Director of the Bureau of the Budget for consideration by the President.

This ruling does not affect field stations (and, so far as we know as yet Beltsville) except that it is important in connection with despatching telegrams, etc., which must now reach Washington before 3:45 on week days and 12:15 p.m. on Saturdays to receive attention those days.

ACTIVITIES BY DEPARTMENT OFFICERS AND EMPLOYEES WITH RELATION TO GENERAL FARM ORGANIZATIONS

Memorandum No. 1188 of March 28th from the Office of the Chief of Bureau, transmits a copy of Memorandum No. 893 by the Secretary, dated March 21, entitled "Activities by Department Officers and Employees with Relation to General Farm Organizations." Dr. Auchter desires that this memorandum be brought to the attention of all members of the Division's staff, both Washington and Field. Its terms are self-explanatory, and should be rigidly observed. Memorandum 893 reads:

"Recently, reports have reached the Department of Agriculture that officers or employees of the Department have participated actively in meetings and in other activities concerned with the establishment of general farm organizations, or with recruiting members for existing farm organizations.

"It has long been the established policy of this Department that its officers and employees shall refrain from taking any part in activities of this type. This is a necessary corollary of the equally long-established policy of the Department that it shall deal fairly with all farm organizations and deal with each upon the same basis.

"As a continuation of this policy, it should be understood by all officers and employees of the Department that it is not permissible for any of them to -

"1. Participate in establishing any general farm organization.

"2. Act as organizer for any general farm organization, or hold any other office therein.

"3. Act as financial or business agent for any general farm organization.

"4. Participate in any way in any membership campaign or other activity designed to recruit members for any such organization.

"The phrase 'general farm organization' used in this memorandum is intended to refer to such national, regional, or State farm organizations as, among others, The National Grange, The American Farm Bureau Federation, The Farmers' Union, The Farmers' Equity League, The Missouri Farmers' Association, The Farmers' Holiday Association, and their regional, State, and local constituent groups.

"This statement should not be construed as implying an unfriendly attitude toward farm organizations. Farmers, like other great economic groups in our society, require non-governmental organizations through

which they may develop and express their hopes, aspirations, and desires; through which they may make our democratic processes vital; through which, collectively, they may reach the right people at the right time.

"But the Department must distinguish clearly between what it is proper for a non-governmental farm organization to do, and what it is proper for a governmental employee to do. The same reasoning which led to the Congressional enactment that governmental employees should not directly or indirectly take any action to influence the legislative process (except through the established procedures of government), also leads to the conclusion that official personnel must not aid in the formation or development of farm organizations, no matter how desirable they may be.

"Employees may, of course, participate in the organization of groups that are needed in carrying out Federally authorized programs--for example, an REA cooperative, a cooperative of FSA borrowers, and similar groups determined by the appropriate chief of bureau to be essential in effectuating Federally authorized programs. Even here, however, care must be exercised because the Department does not wish to see this type of specialized organization develop into a general farm organization. Certainly it is contrary to policy for local groups that participate in Federal-program effectuation to federate into State, regional, or national organizations.

"The head of every bureau and office of the Department is requested to bring this memorandum to the attention of all its officers and employees, both in Washington and in the field. If any violations of any of the provisions of this memorandum should occur, full information with reference thereto should at once be submitted to the Director of Personnel by the head of the bureau in which the person violating any of these provisions is employed."

Vegetable Seed Treatments

There has just come from the press what is likely to prove one of our most popular Farmers' Bulletins--No. 1862, "Vegetable Seed Treatments," by R. J. Haskell and S. P. Doolittle.

Many diseases of vegetable crops are caused by bacteria or fungi that are carried in, on, or with the seed. Seed treatments fall into two groups: (1) Seed disinfectants and (2) seed protectants. The treatments suggested in the bulletin are based on investigations and recommendations of Federal and State research and extension workers. In many instances a choice of several treatments is given!

INTRODUCTION OF NEW VARIETIES OF PLANTS

"When attempting to test or introduce seeds, cuttings, or plants of new introductions, strains, or varieties, the distribution should be made in such manner that there can be no criticism on the grounds of improperly favoring any one individual or group," points out Bureau of Plant Industry Memorandum No. 1189 of March 31, 1941.

"When it is necessary to confine increase to a restricted number of growers, seedsmen, or nurserymen, this should be done under an agreement which will effectively prevent undue profits, and which will insure no favoritism in subsequent distribution. If the new product is of such nature that it must normally be propagated and distributed only through commercial agencies, care must be taken to insure that no single firm has any advantage over others operating in the area to which the new material is adapted. In such instance, if at all possible it is preferable to arrange for introduction through organizations representing all or a large part of a trade group, accepting the group's designation of individual concerns that may increase the new introduction at reasonable prices for all. In the case of plants, the seed supplies of which are usually grown as a part of normal farm operations, an agency such as a State seed improvement association offers a suitable avenue for distribution. Since most of the work carried by the Bureau on crop plants of this character is conducted in cooperation with the State Agricultural Experiment Station, it is usually most convenient to make distributions through the State machinery, which may or may not include the crop improvement association.

Photographs

"When a new selection has demonstrated its value sufficiently for naming and introduction, photographs will be made where practicable for later distribution to growers, seedsmen, or nurserymen requesting them. Firms receiving these photographs will get them with the understanding that the caption used directly beneath the photograph will not include, as part of the name of the new variety, any reference to the Department, the Bureau, or individual workers. In the descriptive matter accompanying the photograph, we have no objection if the work of the Bureau in creating the new variety is referred to or if our official description is used."

OBSERVATION OF LOCAL REGULATIONS IN EFFECT AT MANUFACTURING PLANTS ENGAGED IN DEFENSE WORK

Attention has been called to the fact that some Government employees are insisting that their Department identification cards, etc. are sufficient for access to the defense plants. While such credentials should be used for the purpose of identification, it is essential to the local security of each plant that all visitors comply with local regulations. All employees of the Division who may have occasion to enter defense plants, therefore, are directed to comply with all local regulations concerning the wearing of identification badges, signing of pass registers of the plant, etc.

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. XIII U. S. Horticultural Station, Beltsville, Md. No. 9
May 1, 1941

Oust the Obsolete! Our colleague, Dr. B. L. Wade of the U. S. Regional Vegetable Breeding Laboratory at Charleston, S. C., seems to have devised an admirable technique for ousting the obsolute--that is to say for persuading seedsment to cooperate in the prompt distribution of promising new vegetable varieties.

In the past seedsmen have depended chiefly on chance crosses and the keen eyes of amateur plant breeders for new varieties. With the remarkable advances in scientific plant breeding, however, most new varieties now are coming from the controlled breeding work of the Federal and State stations and from the more advanced seedsmen themselves. However, seedsmen have for the most part been reluctant to handle new varieties since it adds considerably to the cost of acquiring and maintaining seed stocks. This attitude has been taken not only in relation to local strains but with well tested varieties introduced by other seedsmen and other agencies. In some cases the opposition takes the form of fear of defects in the new variety and the seedsman finds himself with insufficient seed of the new sorts to meet demands and so sees competitors get the business while he has in stock unsalable supplies of old varieties. On the other hand, seedsmen who have not been sufficiently cautious sometimes find themselves overstocked with seed of new varieties for which there proves to be only a limited market. So, in general, the average seedsman is interested only in strains of vegetables that have proved to be acceptable over a wide range of growing conditions.

After several years of observation, however, Dr. Wade is convinced that varieties of vegetables rather rigidly adapted to certain conditions are needed in many places, though it is quite unlikely that these locally

adapted strains will be widely useful over large areas. The introduction of such strains will be difficult unless seedsmen can reorient their viewpoints concerning the general adaptability of varieties. He believes that there is a ready solution of the problem at hand if the seedsmen will frankly recognize the situation. If many new strains are handled, the cost of maintaining several new lines on which production is limited will necessarily mean a higher unit cost to the ultimate grower, but the grower should be willing to pay this since from the seed he can quite likely grow a crop that will be more profitable to him than the standard sorts.

It might be possible for seed companies to divide and conquer. One company would supply itself and any others included in a cooperative understanding with certain strains; the other members of the cooperative would supply other strains. Too, a corollary of this would be pooled observations in various places of trial so that performance could be tested over wide areas without high costs to any one seedsman or firm. Speaking from the viewpoint of growers in the Charleston section, for example, Dr. Wade points out that most observations made by the seedsmen who supply these growers are confined to northern or western trial grounds where conditions may be strikingly different from those in the South. In some cases the evaluation of a southern variety based on performance outside the Southern area has resulted in the increase of unadapted strains. If the cooperative arrangement suggested could be put into effect, it seems that it would be possible for seedsmen to carry all vegetable strains needed, even those of a very special type, with but a slight advance in price over that of standard sorts.

If seedsmen do not arrange for the satisfactory supply of locally adapted varieties and strains of vegetable, for example, it will necessarily fall into the hands of men with limited experience in seed production, with plenty of disappointment for all concerned. Some new strains will, of course, be well handled, but it is quite probable that if the seedsmen with their years of experience and expensive equipment do not grow the new strains the cost of new equipment or of training men to produce seed will have to come out of the pockets of the vegetable growers using the seed. In some cases this expanded cost may be so high as to interfere with the increase of new varieties after they have been produced.

There can be little question as to the desirability of new and improved varieties. Even in the case of such a popular variety as the Bountiful snap bean, for example, it is clearly recognized that it has glaring weaknesses. The most popular shipping bean of the South, it is of very poor quality except when picked at an immature stage, through which it passes very quickly. In addition it is extremely susceptible to bacterial blights and to certain strains of rusts. Seedsmen are rather unhappy over the market garden bean variety situation for the South also, since all the varieties now commonly grown are heavily damaged by leaf hoppers carrying curly top virus in certain seed growing areas; or by bacterial blights in other places.

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

Writing to Dr. Cullinan on April 7th he says: "The warm weather of the past week caused peach buds and flowers to develop rapidly. Hiley trees in this section were in full bloom on April 2, eight days later than last year, and Early Rose trees on April 7, a week later. The pollination work in the breeding program is now finished for this season, with more than 15,000 cross-pollinations having been made. The different varieties bloomed closely enough together this year so that all combinations were feasible, with the exception of two late-blooming Red Bird hybrids which I wished to use with Halehaven. To make these crosses, it was necessary to use Halehaven trees in a commercial orchard near Woodbury, Ga., about 60 miles northwest of Fort Valley, which blossomed several days later than our Halehaven trees."

In an earlier report he mentioned an interesting experiment: "A little test on means of growing Shalil Cling seeds, which have never given a satisfactory germination when planted in the field, produced some interesting results. The seeds had been after-ripened in the refrigerator for three months, and after the following treatments, were planted in soil in the greenhouse.

Uncracked, Semesan 1:400	- 31 seeds	- 2 germinated
Uncracked, untreated	- 31 seeds	- 3 germinated
Cracked, Semesan 1:400	- 32 seeds	- 23 germinated
Cracked, untreated	- 31 seeds	- 2 germinated

"The seed must be cracked for best germination, but when cracked disinfection is also necessary."

Lee M. Hutchins, Brownwood, Tex. (Fruit tree virus diseases)

"In what we call the Lesley block, we have seen remarkable natural spread of peach mosaic where trees are growing closely together and branches are interlocking. In one location there, 18 trees in a row contracted the disease in the natural manner. We are taking this as an important lead in the vector work, and we are now planning to put small potted trees on platforms so that their branches will touch the branches of mosaic affected larger trees. It has been learned previously that small nursery trees planted in the ground beneath mosaic trees did not contract the disease the first year they were there. It would seem probable that if the branches are touching, however, the vector may cross from the larger to the smaller trees. By tying this up with insect populations, and by so exposing the young trees at different intervals during the year, it might lead to an important discovery on the vector and its habits. We also plan to use some older trees potted and placed on platforms for this same purpose."

DECIDUOUS FRUIT INVESTIGATIONS

E. S. Degman, Medford, Oreg.

"I attended the water forecast meeting in Klamath Falls on April 8," he writes April 16th from the U. S. Pear Field Station. "At that time it was predicted that Southeastern Oregon will have ample irrigation water for the season but that all other sections of the State face probable shortages. The Medford area will probably be critically short. Unless we have greater than normal rainfall from now on, the supply of stored water will be gone early in July. Since about 40 percent of the Bartlett tonnage and 60 percent of the late pear tonnage is produced after July 1, a water shortage would seriously reduce the total tonnage.

"A water shortage will interfere with the experimental program also. Experiments in recent years indicate that our most promising lead on the moisture penetration problem is to produce more and better cover crops and to let them mature before discing under. The matured material decays slowly and while it is in the undecayed condition it exerts a physical separation of the soil particles. This resulting porosity permits rapid penetration of water. Naturally the question of water usage by the cover crop comes up. The cover crop uses considerable water during the early part of the season, but at that time there is usually an abundance of flood water. Later the cover crop matures and its water requirement is greatly reduced. Also it mats down and reduces the water loss due to surface evaporation. This latter point is important. Experiments last year indicated that approximately half of the water applied during a normal irrigation is lost during the time that the water is being applied.

"While the cover crop will require more water early in the season, it may require only slightly more later in the season when stored water is being used. Experiments conducted in 1940 indicated that with frequent irrigation it took one more irrigation up to July 20 where there was a cover crop to maintain the same soil moisture condition as that where the cover crop was put under in early May. This represents an increase of only 3 percent in the actual amount of water applied. Of course the cover crop used more than 3 percent of the water, but a lot of the water used by the cover crop would have been lost by surface evaporation had it not been for the shading effect of the cover crop.

"More elaborate experiments are planned for this year along this line, especially on the moderately irrigated plots. However, if there is no water after July 10, the data will have little value..."

DECIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz, Hood River, Oreg.

"Temperature dropped to 20°F. the night of March 13th," he writes. "The skin on young pears seemed to slough easily when rubbed but this appeared to grow back tightly again in a short time. Whether this type of injury was sufficient to cause some later fruit russet is difficult to predict. On March 30 the temperature again dropped to 28-30°F. but no visible injury has yet appeared. One grower in a frost pocket has smudge pots set out and plans to protect his orchard. This is mostly a new experience in the Valley...

"Bud development advanced too rapidly this year. Buds were ready to separate on pears by the 18th. On the 31st 1-2 blooms were already open in the scab plots and Anjous were in full bloom at the station farm April 2. This is one full week ahead of last year, which was considered an early season. Temperatures dropped to 26°F. on May 25 of last year, so trouble may still be anticipated. If frosts do not occur between April 11 and 18, the period of full moon when our frosts mostly occur, we shall feel fortunate."

Elmer Snyder, Fresno, Calif.

"Green weights were obtained of various cover crops that were seeded last fall," he writes April 5th. "The Windsor bean, Canadian Field peas, and vetches were especially heavy in top weight produced. Melilotus indica was in the good class, while Melilotus alba, and Black Mustard were an absolute failure. These last two apparently could not stand the wet winter as a good stand was obtained when seeded in Fall."

John C. Dunegan, Fayetteville, Ark.

"The prospects for the 1941 fruit crop are very bright indeed. The plums, peaches, cherries and apples all have a heavy bud crop and if there is no sudden drop in temperature during the next week or so we should have a bumper fruit crop this year."

N. H. Loomis, Meridian, Miss.

Writing from the United States Horticultural Field Station on April 12th, he reports:

"Strawberries are blossoming heavily and have set a heavy crop. It will be at least ten days before there will be many ripe fruits, and probably very few berries will be shipped from this section before the first of May..."

FACTORY FOR MAKING SWEETPOTATO FEED

Sweetpotato feed for livestock is to be produced on a comercial scale this season at the Atmore Prison farm in Alabama, according to a Press Release of April 20th. The Department has received formal notification of this and will cooperate with the State. Governor Dixon of Alabama has announced that the machinery is being bought and that the State plans to grow about 500 acres of sweetpotatoes at the prison farm.

The idea of growing and processing sweetpotatoes as an important carbohydrate feed for livestock in the South has been advocated by Department specialists for some time and they plan to supply technical assistance for the State's new venture in feed production in much the same way that they have been assisting in the solution of the problems of making sweetpotato starch at the cooperative starch plant at Laurel, Miss. Considerable attention has been given at the starch plant to the possibilities of a livestock feed made from the byproduct pulp at the plant or from sweetpotatoes from which starch has not been extracted. It was found that the sugar-beet shredder, or "crosette cutter", was an effective and economical machine with which to prepare sweetpotatoes for drying for feed. The Alabama plans call for use of this machine as part of the equipment for the new plant.

THE FRUIT AND VEGETABLE SITUATION

A March summary from the Bureau of Agricultural Economics placed the production of early strawberries at 2,470,000 crates as compared with 1,982,000 crates last year, and the 10-year (1930-39) average of 2,340,000 crates. It is estimated that 65 percent of the early strawberries will come from Louisiana, carlot shipments of early strawberries reaching the peak the latter part of April. The average of strawberries available for picking in the second early States is indicated to total 61,300 acres compared with 51,300 last year...Sales of apples in domestic markets between December 1 and March 1, 1940-41, were 2 million bushels larger than in the same period a year earlier.

Smaller supplies of potatoes and dry edible beans, but larger supplies of sweetpotatoes and truck crops for market and processing are in prospect for 1941...The prospective acreage of potatoes is the smallest since 1926--4 percent smaller than the acreage planted in 1940. An 8 percent increase in the prospective acreage of sweetpotatoes indicates that with average yields production in 1941 is likely to be larger than the relatively small crop of 62 million bushels in 1940. Because of the record large supplies and low prices for dry edible beans during the current season, the prospective acreage for 1941 is reduced 8 percent from the acreage planted in 1940. With an increase in the carryover in prospect the supply of beans available in 1941 probably will not be reduced as much as the present acreage prospects would indicate.

GEORGE P. HOFFMANN DIES AT MERIDIAN, MISS.

The Division lost one of its ablest and best liked staff members in the death of George P. Hoffman, superintendent of the U. S. Horticultural Field Station, Meredian, Miss. the morning of April 1, 1941. Just as he was starting to work he suffered a severe heart attack and died within an hour, at 8:30 a.m.

Mr. Hoffmann was a graduate of Clemson College, and did post graduate work at Cornell and Michigan State College. He began his working career as extension horticulturist at Clemson, and was subsequently instructor in horticulture and acting head of the horticultural department. Later he served as horticulturist and director of research at the Penney-Gwinn Farms, Green Cove, Fla.

He joined the Division's staff late in 1932, in connection with the work on pecans. With the enlargement of the Meridan station and the expansion of its work to take in other horticultural investigations Mr. Hoffmann not only took over the general administrative work and supervision of station experiments but also took charge of the building program that included the erection and equipment of office and laboratory, clearing land, installing irrigation system, and erection of greenhouses.

HORTICULTURAL SOCIETY HEADED BY DR. KRAUS

Dr. E. J. Kraus of our Division was elected president of the American Horticultural Society of its annual meeting April 19, 1941, at the Shoreham Hotel, Washington, D. C. Elected to serve with him for one year as first vice president was Dr. D. Victor Lumsden, also of our staff. Mrs. Robert Woods Bliss was elected second vice president, Miss Cary B. Millholland, secretary, and Col. Henry P. Erwin, treasurer.

Mr. B. Y. Morrison, retiring president, and Dr. Kraus both spoke briefly at the luncheon, which was attended by more than 100 members.

REVIEW OF APPLIED MYCOLOGY

Dr. Lee M. Hutchins, P. O. Box 299, Brownwood, Texas, is anxious to complete his set of the Review of Applied Mycology, which now lacks the following:

Vol. XI, Index
XII, No. 6
XVI, No. 9
XVII, No. 3

He would be glad to hear from any one who has duplicates of these or copies that are not needed.

NUT INVESTIGATIONS

George F. Potter, Bogalusa, La. (Tung investigations)

"Now that the trees are in bloom, the effects of the freeze of November 15 and 16, 1940, have become evident and have astonished many of the growers," he writes April 12th. "During December we estimated from sample shoots collected at random in various orchards that the injury on the average would be about 15 percent. This still appears to be a pretty good estimate. It is now evident that the injury is very severe on certain individual trees, probably those that bore most heavily in 1940. Here and there an entire tree seems to be killed and in some instances we know that these had a very heavy crop last season. Others show little or no damage. There is also a good deal of variation between orchards.

"Provided that we have no late spring frosts, and it is rather unlikely that one will occur after this date, it seems likely that the crop will be at least as large as last year. Last year the crop was cut considerably by a late spring frost. In some areas the bloom was practically wiped out. The damage from the November freeze is more universal but in no locality is there a complete loss. The total damage this year is probably considerably more than last season but this will be offset by increase in the size of trees and number of bearing orchards...

"Mr. Merrill reports that some of the nuts that were stratified in sand during the winter and planted in the nursery in February are coming up. When the whole fruit was stratified just as it comes from the tree, germination is somewhat slower. This confirms the favorable results with stratification obtained at the Cairo laboratory. Mr. Hines reports that in his greenhouse tests, nuts stored in a warm room, those from a refrigeration plant at about 33°F., and those stored in an open unheated shed, are all germinating about equally well. Some nuts from similar lots of seed harvested in 1939 have been planted but not a single one has grown...

"This season Dr. Fernholz has again succeeded in getting good germination of tung pollen on artificial media. The best success has been had with the 1 percent agar and 10 percent cane sugar. While still warm, drops of this medium are spread on clean 1 x 3 inch microscope slides and allowed to harden after which the pollen is dusted on. The slides are then placed on edge in a stender dish. Two short pieces of glass rod are placed beneath the slots in the end of the dish to hold the slides up a short distance from the bottom. A few drops of water are placed in the bottom of the dish to maintain a high humidity. In a refrigerator little or no germination takes place. At room temperature germination on various slides ranges from 35 to 70 percent. In an incubator at 28°, germination is slightly better than at room temperature, ranging from

NUT INVESTIGATIONS

George F. Potter (continued)

about 50 to 80 percent. Samples of pollen have been stored in the refrigerator in atmospheres at different degrees of saturation with water. To date the humidity has caused no distinct differences in longevity of the pollen.

"Dr. Fernholz began freezing tests with buds and blossoms about the middle of March. When growth was just about to start but the bud scales were still tightly closed over the terminal buds, a temperature of 24°F. cuased no injury. When the bud scales had opened but the flower buds were still in a tight mass about the size of a man's thumb, temperature of 24 to 26° proved critical and frequently killed all or nearly all of the flowers. However, at this stage none were injured at 28°F.

"When the buds were in the 'open cluster' stage, but before any blossoms had opened, a temperature of 28° caused serious injury. However, even in this stage, 30° caused no injury and the buds kept better in jars of water than those not frozen. This occurred on three successive weeks. It is common knowledge that flowers and buds of the tung tree do not stand up well after being removed from the tree, but we are unable to offer any explanation as to why they keep better after exposure to a temperature of 30°F."

Writing under date of April 19th, he reports: "Dr. McCann found time this week to make some observations on ratios of male and female flowers. In 30 trees taken at random in orchards in the vicinity of Bogalusa, the lowest ratio was 1 female to 8.2 male flowers. On the other hand, one tree was found in which the ratio was 1 female flower to 110 males. No doubt still higher ratios could be found by searching out the trees. The average for the 30 trees examined is 1 female to 41 males."

Felix S. Lagassé, Gainesville, Fla. (Tung investigations)

"The blossoming season has been unusually late in this area this season but is now well over its peak," he writes for the period from April 7th to 19th, inclusive.

"Some fruits are now 1/2 inch in diameter. The mills are operating to full capacity but due to the unusual amount of moisture in the fruits at harvest last fall their efficiency is reduced nearly half. In brief, this moist fruit has to move through the mill at a much slower rate. This all points to the desirability of developing a strain of tung fruit that would mature early enough to drop dry and be harvested before late fall when cooler and poorer drying conditions usually exist."

NUT INVESTIGATIONS

Milo N. Wood, Sacramento, Calif.

"During the week I have taken a few short trips into the field with growers having trouble," he writes for the week ending April 12th. "Owing to the weather a great many peach trees and almond trees have been drowned out in certain localities. Even very large old trees have apparently been killed outright. From the limited observations I have made to date I believe that the damage done by too much water is very heavy.

"One grower tells me that he kept track of every rainy day and that he finds his record shows 79 rainy days with no clear days in between, and that there were 100 rainy days with only 5 days during the whole period when it did not rain. Basements all over the country and at Davis and Sacramento, which hitherto have not leaked have had to have the water pumped out of them this season.

"I have had an opportunity to see some more almond orchards and find the crop to be very light. This seems to be largely due to lack of pollination. I do not see how there can be much of an almond crop in this section of the State for the reason that there was practically no good pollinating weather during most of the blooming season.

"Walnut growers are worried over the blight situation. Many of the orchards have been so wet that it was impossible to spray for walnut blight at the proper time and in many orchards where spray was applied the rains came soon after it was on. In some of the walnut orchards in the Sacramento Valley I can find no trace of blight as yet."

Paul W. Miller, Corvallis, Oreg.

"During the latter part of the week a trip was made to Oregon City, Oreg., to check upon the cause of a supposedly new foliage disease of filberts which was reported to be causing severe damage to certain orchards in that region," he writes for the week ending April 12th. Upon inspection it was found that the trouble in question was not a parasitic disease, but freeze damage due to the unusually cold temperatures which occured in western Oregon about a month ago. In this area minimum temperatures of 23°F. were recorded during this cold period.

"This is the first instance of the killing of young filbert leaves from cold temperatures that I have observed since I have been connected with the nut disease project. We have had a number of severe frosts previously with temperatures ranging down to 29°F. after the filbert buds opened, but no temperatures as low as 23°F. This same freeze reduced the potential peach crop in western Oregon by at least 50 percent. The cherry and prune crops were also reduced appreciably."

Office of Chief of Bureau April 10, 1941
B.P.I. Memo. 1190

MEMORANDUM FOR HEADS OF DIVISIONS

Gentlemen:

I enclose copy of Personnel Circular No. 100, Supplement No. 7, dated March 28, 1941, entitled "Military Training and Service". Your attention is called to Memorandum No. 877, by the Acting Secretary, dated October 1, 1940, entitled "Selective Training and Service". Your particular attention is called to the following paragraph:

> "It is highly desirable to have a common Department viewpoint on the question of deferments and of course only those which are fully justified will be approved by the local board. When such action is necessary, chiefs of bureaus and offices should not hesitate to recommend deferments to the local boards in order to protect the broader interests of the Government irrespective of whether the employee has indicated his desire to be deferred. The wishes of the individual in such a case should be subordinated to the needs of the Government. No office is authorized to recomment the deferment of an employee to a local board without express authority, telegraphic or otherwise, from the chief of bureau or office in the particular case."

The memorandum establishes an Advisory Committee on Selective Service, and provides that this Committee will review recommendations of the Chief of Bureau for deferments. Personnel Circular No. 100, dated November 16, 1940, by the Director of Personnel, entitled "Military Training and Service", outlines further the procedure to be followed where consideration should be given to a request for deferment.

Your attention is called to the following paragraph of the enclosed Personnel Circular:

> "Responsibility in each bureau for requesting deferments should be fixed in one place to insure uniform and effective handling. Bureau officials who assemble and submit the information needed by the Committee are urged to familiarize themselves with the Selective Service Regulations and with the instructions and information which have been made available throughout the Department."

All recommendations for deferments should be submitted to the Chief of Bureau, through the Head of the Division, for consideration. No requests for deferment should be submitted to local Selective Service Boards except when authorized by the Department.

--E. C. Auchter, Chief of Bureau

UNITED STATES DEPARTMENT OF AGRICULTURE
Office of Personnel
Washington, D. C.

March 28, 1941

Personnel Circular No. 100, Supplement No. 7

MILITARY TRAINING AND SERVICE

Selective Service Deferments

The advisory committee on Selective Service, established October 1, 1940 in Secretary's Memorandum 877, has from time to time had submitted to it proposals that requests be filed with Local Boards for the deferment of employees from military training and service. The number of deferment cases handled through February 27, 1941, and their disposition, is shown in the table below:

DEFERMENT CASES HANDLED TO FEBRUARY 27, 1941

Bureau	Total No. Received	Approved		Disapproved	Number Returned For More Information
		Number	Period (mon.)		
AAA	1	1	3		4
AC&E	6	2	6		
BAE	4	4	2 for 6 mo. 1 for 3 mo. 1 for 2 mo.		
AMS	14	7	4 for 1 mo. 3 for 3 mo.	7	
BAI	1	1	6		
CEA	37			1	36
BDI	2			2	
FS	2	2	1 for 6 mo. 1 for 3 mo.		
FSA	5	1	3	3	1
BPI	5	3	2 for 6 mo. 1 for 3 mo.	2	
REA	2	1	3	1	
INF	1			1	
Personnel	2	2	1 for 3 mo. 1 for 1 mo.		
SCS	2	2	6		
SMA	7	4	3 for 3 mo. 1 for 6 mo.	3	
Totals 15 burs.	91	30		20	41

The Advisory Committee on Selective Service, in considering requests for deferment, has been somewhat handicapped in many cases and for various reasons. One of the reasons for the issuance of Secretary's Memorandum No. 877 was to place bureaus and offices on notice that all employees who qualified for military training were expected to receive that training. It was emphasized in the Secretary's Memorandum that bureaus should make an immediate study of their employment situation and take steps at once to provide for the training of employee to fill the positions of those who probably would be called for military training and service, and to anticipate such recruiting measures as would be necessary. Personnel Circular No. 100 described what information the Committee needed in passing upon requests for deferment. Yet, in spite of this, requests for deferment from military training and service have been submitted with inadequate information. Weaknesses appearing in some of the submissions are as follows: (1) Order numbers have not been given, or, if the order numbers were given, they were so far down the line that the requests could not be considered intelligently; (2) Requests for deferment have not been based upon the situation which will exist on or about the time the employee is to be called for military training and service; (3) Qualifications of employees have been furnished, and facts about the particular work the employee is doing omitted; (4) Requests for deferment have not given any information as to what attempts have been made to secure substitutes to replace those going into military training and service; (5) Requests for deferment have been received without any time limit being shown. (In some instances the time limit has been given as one year, or two years, indicating that those responsible in the bureau for assembling information and for preparing requests for deferment were unfamiliar with the requirement that in no case can the time limit exceed six months).

There have been indications that in some bureaus every request for deferment, originating in a division of the bureau or in the field service of the bureau, has been routed to the Committee. Weak cases should be weeded out in the bureau, and only cases which are really worthy should be submitted to the Committee for consideration.

Responsibility in each bureau for requesting deferments should be fixed in one place to insure uniform and effective handling. Bureau officials who assemble and submit the information needed by the Committee are urged to familiarize themselves with the Selective Service Regulations and with the instructions and information which have been made available throughout the Department.

The Advisory Committee on Selective Service will be glad to discuss any situations which may arise in connection with the deferment of employees. The Committee is anxious to be fair and to insure an overall, uniform policy throughout the Department.

Roy F. Hendrickson

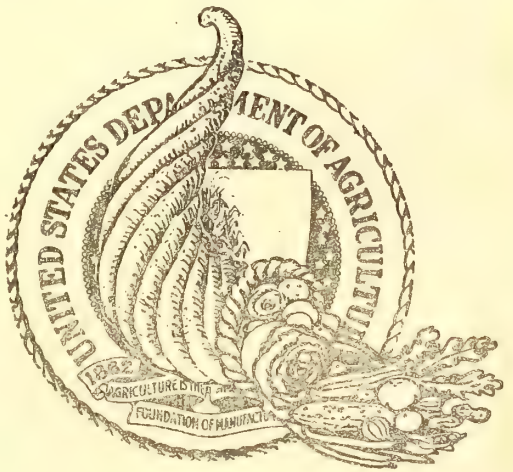
Director of Personnel

Vol. 13 No. 9 May 1, 1941

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. XIII U. S. Horticultural Station, Beltsville, Md. No. 10
May 15, 1941

Plant Research-Human Welfare. "When this country was founded, nineteen people out of every twenty had to spend all their time producing food for themselves and the twentieth person. That was true all over the world," Dr. Auchter pointed out in the introductory remarks to an address before the Kansas Academy of Science, published in Science for April 25, 1941. "A hundred years ago eight people out of every ten still had to work with the soil, producing food for themselves and the other two people. Today this proportion is exactly reversed. About two people out of every ten produce food for the whole ten, or, putting it another way, one person on the land supports himself, three people in town and contributes to the support of one person overseas.

"What is the significance of this fact? Just this: When nineteen people out of twenty have to spend their energy producing food, that leaves only one person to produce everything else. Obviously there won't be much else; certainly there won't be any large-scale industries such as we know today. But when only two people out of ten have to produce food, the other eight are released to do a multitude of things. Large-scale factory production becomes possible. All kinds of social services become possible.

"In brief, the degree of development of any society depends on the sufficiency of its agricultural resources and the efficiency of its farmers. Only where farmers are efficient and can release other men from the absolute necessity for devoting their time to primary production can the industries, sciences and arts that characterize modern civilization be developed. Our civilization in the United States today rests solidly on the achievements of farmers. These achievements have made it possible for two people to feed eight others besides themselves.

"It has been done through science and engineering skill. Machinery and engineering enabled farmers to produce for more than they used to with the same amount of work. But along with advances in engineering during the past century there have been rapid advances in plant science. The present efficiency of agriculture would not have been possible without a new knowledge of soils and fertilizers and their effects on plants, and a new power to breed more productive plants--plants resistant to disease and other adverse conditions and adapted specifically to machine production. The plant scientist developing a bread wheat that could be grown here on the plains of Kansas contributed as truly to our present civilization as the engineer working out methods for the line production of automobiles.

"It may be thought at this point that in spite of all this scientific progress, there are surplus farm products and large numbers of unemployed in the cities. Has science done too good a job? Has it made production too efficient? I think we can answer those questions in this way: If fault there is, it lies not with science but with the use made of science by society. Farmers have not yet produced more of anything than the people of the world actually need--if it were available to them. Every study of standards of living and of consumption show that people could use more of almost all farm products than they have. The need is not for science to let up in its search for better and more efficient methods of production; the need is to find truly scientific methods of distribution. People with more remunerative employment will purchase more food products. It is desirable now to use the kind of science necessary to build an efficient bridge between production and utilization, rather than to dispense with any of the sciences. The fight against insects, diseases and environmental conditions will probably never be finished. New problems will constantly be arising which will require even better scientific methods for their solution, if we are to maintain the progress made to date.

"Why is progress in plant science so important to human welfare? It is the capacity of green plants for manufacturing food--for accumulating energy as food--that makes them the foundation of any system of economy dealing with living things. When plant foods are eaten by human beings and animals, the compounds are broken down in their bodies, energy is made available for growth and movement and parts of the original compounds are again released into the air in the form of carbon dioxide and moisture or returned to the soil. These end products can again be used by plants in building new plant bodies and thus a 'wheel of life' is established.

"When I think of this 'wheel of life,' it seems to me that in the past, scientists have neglected the interrelationship between soil and plant, animal and human nutrition. We have been prone to consider the problems of each separately rather than to consider them as segments of the whole.

"Early in the development of modern science, specialization became necessary, and today we have reached the point where the whole of science is rather minutely departmentalized. Each department has its own objectives. By this method, we have accumulated a vast amount of information--for example, regarding the classification, chemical and physical properties and management of soils; and regarding the growth and reproduction of plants and animals. Chemistry, physiology, anatomy, pathology, physics, genetics, bacteriology and other sciences have all contributed to our knowledge of these subjects but each in its separate department without full consideration of a coordination of effort to the broader problems of human welfare.

"That method was necessitated by the vastness and complexity of the facts with which science deals, and it is still necessary. But a concept of the unity of nature is no less important than a knowledge of its elements and its complexity, and the time has come when we shall have to devote more attention to a resynthesis of the many facts which are being uncovered but without neglecting the various fields of specialization..."

In the main body of his talk Dr. Auchter pointed out some of the newer methods that seem desirable in attacking the plant and nutritional problems, and mentioned outstanding achievements of the Department and the State stations, emphasizing the fact that the present and the future most utilize the work of the past. Much of modern accomplishment rests on the fundamental discoveries made by the great scientists of the past.

"Today there are few 'plant scientists' in the old original sense," he said. "Such a multitude of discoveries have been made that we now have geneticists, pathologists, soil technologists, botanists, horticulturist, agronomists and specialists in other fields. By working together, they have been and are able to apply their various specialties to the solution of important basic and applied problems. But there is still need for more closely coordinating the various specialized efforts in an attack on many of the problems...

"Nutritionists and medical men have proved that there are immense possibilities for building a more robust citizenship in this country through improved nutrition. This means, of course, an attack on both poverty and ignorance. An astonishing number of people can afford good diets but don't know how to get them. Can plant science contribute to the goal of better bodies through better nutrition? My answer is an emphatic 'yes'."

Some of the means through which this can be done are already at work, he pointed out--new crop plants have been introduced, better varieties developed and cultural and harvesting and handling methods so improved that many food crops formerly beyond the means of the average man have now come to form a definite part of his daily diet.

"A national attack on this problem is now being made," Dr. Auchter pointed out. "Funds have been made available to the Government and States for fundamental basic research in relation to agriculture under the Bankhead-Jones Act. Part of these funds were made available for the establishment of special regional laboratories. These laboratories cover such research projects as the breeding and improvement of vegetables; pasture improvement studies; effects of the salinity of irrigation water upon plant growth and the physical composition of the soil; poultry and animal diseases; soybean utilization, etc.

"The laboratory most recently established deals with the problem which I have just been discussing. This laboratory in cooperation with various State agricultural experiment stations and other research institutions is located at Cornell University, Ithaca, New York, and is national in scope. Buildings and greenhouses have been erected and a staff trained in all of these fields has been secured to attack this whole problem of the interrelation of soils and plant, animal and human nutrition. A national advisory council of specialists in the problems of nutrition, geneticists, agronomists, plant physiologists, animal physiologists, horticulturists, soil scientists, botanists, members of the United States Public Health Service and medical men, has been formed.

"Information regarding some of the soils of the United States with particular reference to their origin, chemical and physical composition, amenability to various treatments and effectiveness in producing plants, is available. An attempt will be made to correlate the composition and nutritional value of foods with soil type, climatic conditions and practices followed in production. One of the great needs appears to be that of making more comprehensive studies and complete analysis of agricultural soil types and areas and the variety and stage of maturity of crops that grow upon them under known conditions of climate, fertilization and irrigation. Such information would enable us to determine if deficiencies or excesses of certain elements occur in such soils and plants and, if so, to correct the conditions with the ultimate view of improving the health of human beings.

"Concurrently, a survey will be made to determine the occurrence of the various elements in fertilizer materials, sprays, dusts and the like and whether such substances may definitely modify the composition of plants and thus make them more nutritious or less nutritious or even toxic to man and animals. Special attention will be given to the physiological effects of the so-called rare or trace elements.

"Little is known in detail of the functions of most of the trace elements. Some of them may have subtle and far-reaching effects. Investigations should be made, therefore, of the nature or availability of the compounds occurring in soils and how they are affected by chemical and biological processes in the soil. Studies of the periodicity of the intake or distribution of the elements within the plant and of

the differences among species of plants or among strains within a species in their need for mineral elements and their ability to accumulate them should also be made. And in addition, the effects of chemical additions to the soil upon the composition of the plant at various stages of growth will also be determined.

"Thorough physiological and anatomical studies are to be conducted on plants with reference to the availability, absorption, accumulation and effects upon growth of the various mineral elements--especially the micro elements--including their effect on the elaboration of vitamins, hormones and other compounds...Consideration should also be given to the digestibility and utilization in the body of the various plant compounds in relation to other factors affecting metabolism and growth. Plants produced in controlled experiments or in various soil areas will be fed to the usual laboratory test animals in order to determine how their rate of development, general health and behavior are affected. The effects of plants of known composition on human beings will also be determined. There will be wide studies of the adequacy of the various mineral elements and growth substances in the diets of various population groups, especially those dependent upon locally produced food products. It may be found desirable to conduct breeding investigations for the purpose of developing special strains or varieties of plants in relation to nutritional value. Despite the fact that we have certain genetic strains, the manner in which they are grown may modify their nutritional quality.

"Although the problems concerned in such investigations are extremely complex and will require considerable time and funds for their solution, still their great importance in our national life justifies and, in fact, demands that such studies be made. We know that raising the level of health of the population is important in all phases of our national life...

"Now, in conclusion," said Dr. Auchter, "let me go back for a moment to my original theme... You will remember that I said science was responsible for the development of our modern civilization; and I was not modest about attributing much of this civilization to the development of scientific methods in agriculture. But this is not enough; we can't rest on our oars. Two other things are necessary. First, in order to maintain what we have, we must keep constantly on the job... You might call this defensive research; it is the method by which we defend ourselves against a host of hostile forces. Second, we have another even more far-reaching kind of research that looks to the future. You might call this aggressive research. Certainly we are not entirely satisfied with the civilization we have today. We want to go forward, to build a still better civilization. And as science made our present civilization possible, I believe it will also make possible the better civilization of the future if we keep on with aggressive research in all sciences, natural and social."

DECIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz, Hood River, Oreg.

"Anjou pear blooms were fully opened at the station farm of April 2d," he writes for the month of April. "Delicious apples were in full bloom the 14th and Newtowns the 17th. A near catastrophe occurred April 5th when a sudden thunder and lightning storm turned into a hail storm. Measurements of the hailstones showed them to be 1-1/2 inches in diameter. Many blooms were knocked completely off the trees, but young fruit remaining escaped hail marks. A series of cold nights then occurred starting April 14th when temperatures dropped to 27 and 28. The coldest night recorded was the 17th, 24°F., on lower ground. One grower was forced to smudge eight different nights. Considerable rain fell during the early part of the month, which probably favored scab infection and interrupted pollination...

"Thrips are causing considerable worry to pear and cherry growers in our valley this year. Frost damage is severe in local orchards but most of the plantings escaped visible injury. It is assumed many pears will be frost russetted, however. After the heaviest freeze, young pear fruits rolled between the fingers sloughed the entire outer skin and these are either falling to the ground or show extreme russetting in the calyx region. A crop estimate is difficult because of spotted set but it seems that pears will be about 60 percent normal and that apples will be light also. Cherries set light, while peaches were frost damaged and failed to set in many plantings. Apricots appear to be extremely scarce."

John H. Weinberger, Fort Valley, Ga.

"Peach trees and the fruits themselves have grown very rapidly during the warm weather of last week," he writes April 21, "and I believe they have picked up several days in relative stage of development in comparison with last year. They are now about five days later. With only 11 days difference between time of full bloom for Elberta at Fort Valley and Beltsville, where normally peaches at Beltsville are a month later in blossoming, it is important for the industry that peaches here develop and mature as rapidly as possible. There is only an outside chance now that peaches in Georgia will be injured by cold, and with prospects pointing to the largest crop in years, growers are justifiably concerned over the closeness of the blossoming seasons here and farther north. It appears that there will be considerable overlapping in the ripening seasons of adjacent production areas. We are anticipating, however, that the 11-day spread between Fort Valley and Beltsville will become greater as the season progresses, for it is our observation that peaches in the south of us that are delayed in blossoming by prolonged dormancy develop more rapidly under their higher temperatures, and mature in a fewer number of days than do the same varieties here."

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga. (Continued)

"There has been more winter injury showing up this spring than is usually seen, confined mostly to trees three to five years old," he added, April 28th.

"The damage has been scattered, ranging from none to ten to fifteen percent of the trees killed in some orchards. Sometimes the bark between the ground line and crotch of the tree has been killed, while in other cases only a narrow ring of bark just below the ground line was injured."

R. B. Wilcox, Pemberton, N. J.

Writing from the U. S. Cranberry and Blueberry Disease Laboratory on April 30th he says:

"Cranberry growers have been very much concerned about the weather, especially about the popping of terminal buds on some bogs. A few growers flowed their bogs after having had the water off for from one to two weeks. We drew the water from the seedling plantation on the 17th, the forecast having indicated a drop in temperature. When this drop came, four days later, it was in time to prevent the vines from starting into immediate growth. There were frost warnings for two nights during the last week, and temperatures on the bogs went down to 29 and 27, which was not low enough to be serious.

"Blueberries started into rapid growth at the beginning of the April 16-30 period reported on, and several varieties are now in bloom. Sclerotinia mummies also became active, but lasted for only a very short time, because of the heat and dryness of the soil. The crop of primary spores was remarkably small. There has been no opportunity for infection by these spores, the short rain of the 24th having been succeeded at once by clear weather and low humidities. Some of the buds on 'stunted' plants set last summer appear to be alive, and we hope that they will grow."

John C. Dunegan, Fayetteville, Ark.

"The 1941 season really 'got under way' this week with the arrival of typical blossom blight specimens on Early Wheeler from Augusta, Ark. on April 22d," he writes April 26th from the U. S. Fruit Disease Field Laboratory. "This first pathological specimen of the 1941 season was followed on the 24th by the collection of the conidial stage of apple scab on leaves in our apple check plot.

"The second or calyx application was applied to our apple spray experiment on April 24th."

NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

"Most of the winter cover crops have reached their peak and some of them are beginning to die down," he writes April 19th from the U. S. Pecan Field Station and Laboratory. "The Willamette vetch at Philema has been dying in spotted areas for the past several days and is somewhat disappointing in the total amount of growth made. This is true wherever it was planted last fall and I have found no one who thinks it is as good as Hairy vetch. Augusta vetch at Philema is producing very few seed pods and it is possible that so few seed will be formed that natural reseeding cannot be depended upon for a crop next fall. The explanation for this very light crop of seed is not immediately forthcoming but probably is associated with weather conditions."

John R. Cole, Albany, Ga.

Writing from the U. S. Pecan Disease Field Laboratory on April 26th he says:

"It now appears that a very heavy crop of nuts will be set in Georgia and North Florida this season. In fact all varieties in the vicinity of Monticello, Fla. and Cairo, Ga. have the heaviest pistillate bloom that I have ever seen. In the Taylor orchard where our most important spray experiments are located we have a good pistillate bloom on Schley variety, but it is too early to tell about the Stuart and Alley. At Fort Valley the crop will be 'spotted' in the Mathews orchard, where we harvested a heavy crop last year."

C. E. Schuster, Corvallis, Oreg.

"Probably of more importance than our fertilizer work this year has been the variability of growth of different types of cover crops," he writes April 26th.

"This is more pronounced between the so-called smooth hairy vetch and the common vetch. By the middle of April the common vetch had barely started any spring growth, while the hairy vetch, which apparently has no dormant season during the winter, was growing very rapidly. This type of vetch has responded to fertilizers this year quite readily since the middle of April."

F. N. Dodge, Shreveport (Robson), La.

"Pistillate blossoms are showing up more every day; however, both the staminate and pistillate bloom is light. At present it seems that Desirable trees are the only ones that had a good crop last year and which will have a good crop this year."

DR. STEINBAUER NOW SUPERINTENDENT AT MERIDIAN

Dr. Clarence E. Steinbauer, associate physiologist, who has been a member of the staff of the U. S. Horticultural Station at Beltsville, Md. for the past 10 years, has been transferred to Meridian, Miss. to take charge of the vegetable investigations and to serve as superintendent of the U. S. Horticultural Field Station there.

Dr. Steinbauer will continue the work so ably conducted by our late friend, George P. Hoffmann, who did such an excellent job of establishing the station and cooperating with the several projects that have investigations in progress at Meridian.

The first few years Dr. Steinbauer was with us, he was engaged in Jerusalem artichoke investigations. For the past several years, however, he has devoted his full time to breeding, selection and cultural investigations of sweetpotatoes and peanuts, in cooperation with southern agricultural experiment stations.

The major vegetable investigations now in progress at the Meridian station, and which Dr. Steinbauer will carry on, are with sweetpotatoes, market tomatoes, and asparagus. The studies conducted by the section of vegetable investigations on these crops are intimately tied up with storage and handling investigations being conducted in the Meridian area by Dr. J. H. Lutz of our section of handling, transportation, storage and market disease investigations; and with the work of the Mississippi and other southern agricultural experiment stations.

IN THE PUBLIC SERVICE

In the April, 1, 1941 issue of the News Letter we had the privilege of reproducing an excellent paper by Mr. Roy F. Hendrickson, director of personnel, under the title "You're in the Public Service." We believe Mr. Hendrickson will be pleased with a comment in a report just received from Clifton W. Van Horn, who looks after pecan investigations for us at Yuma, Ariz. Mr. Van Horn is an assistant horticulturist on the staff of the Arizona Agricultural Experiment Station, and also serves as agent in this Division. He writes under date of April 26th:

"Two gentlemen from Bogota, Colombia, South America, department of agriculture, spent some time here at the station on Tuesday and Wednesday. Their chief interest here was with dates, but they were also interested in our pecan work. They said they had purchased pecans in South Carolina for planting nurseries in Colombia.

"One of their comments I thought was particularly interesting. They had letters of introduction from our Department of Agriculture at Washington, D. C., but said they soon found that here in the United States they did not need such letters--since everywhere they stopped everybody was so willing to be helpful."

ADMINISTRATIVE NOTES

Travel The attention of officials and employees issuing and those who use transportation requests is directed to the fact that certain railroads in Trunk Line and Central Passenger Association territory (east of Chicago and St. Louis and north of Washington--except the New England States) offer one-way and round-trip transportation at reduced rates if upper-berth sleeper service is used. If such class of transportation is ordered the transportation request for the rail fare should specify "Upper-berth sleeper to be used." Attention is also invited to the instructions in paragraph 2, General Instructions to Carriers, on reverse of Standard Form No. 1030, "Government Request for Transportation," as follows:

> "Where exceptional conditions require the issuance of transportation differing from that specified in the request, the traveler should note in the following space the actual transportation furnished, the reason for the difference, and sign the statement."

Also, paragraph 3, Notice of Issue of Ticket, on reverse of Standard Form No. 1031, memorandum copy of the transportation request directs--

> "Indicate below the actual transportation furnished where same varies from that requested. (See Instruction 2 on reverse of original request.)"

Accordingly, where service differing from that specified in the request is used, it is incumbent upon all officials and employees to report the required information as instructed, or by separate report if necessary, so that payments may be made for services actually used by the traveler."

Automobile Parts, etc. A synopsis of a decision by the General Accounting Office (B-15400 (S) Contracts-Exchanges-Used for Reconditioned Automobile Parts) reads:

"Old automobile parts may be replaced with reconditioned parts, without advertising for cash bids on the old parts, under a Procurement Division Contract that provides only a net cash charge for reconditioned parts based on the exchange of old parts, where it is administratively determined that such replacement would be more advantageous to the Government than repairing the old parts.

" "The General Accounting Office will not object to the awarding of similar contracts for reconditioned automobile parts after advertising for bids seeking the best price on an exchange basis only. (19 Comp. Gen. 930, modified).

The Business Office can advise you more fully concerning this, if you find yourself interested now or later.

MEMORANDUM FOR HEADS OF DIVISIONS

Gentlemen:

Reference is made to Memorandum to Heads of Divisions dated March 11, 1941, enclosing a copy of Budget and Finance Circular No. 342, entitled "Cost Records for Heavy Motorized Equipment (Form AD 187 and AD 188)".

A number of questions have been raised by divisions as to the use of these accounting records for certain types of equipment under certain field conditions. The point is made that the maintenance of these records under some conditions is extremely burdensome and expensive, and the data obtained would have little or no value. For example, an old tractor no longer useful for field purposes is used primarily for traction power, running a silage cutter and blower, shelling corn, or other purposes of this sort. The use is not extensive, and the tractor has probably reached a state of maturity where it is not efficient. On the other hand, it does run and it does serve a useful purpose. The question is what is to be gained by maintaining a cost record of this old tractor. This is only one of many similar questions that have arisen.

We are desirous of cooperating insofar as we can in the use of this form with a view to developing cost records. In many cases the use of this form should furnish both the field station concerned and the Department valuable information on operating costs. In many cases also these records can undoubtedly be maintained without their being an undue burden. On the other hand, there will be cases where nothing is to be gained by keeping a cost record or where the maintenance of the cost record involves undue costs or interference with operations. It is our desire to cooperate sincerely and effectively in securing these cost records, but it is expected that those concerned will use common sense under the circumstances obtaining at any particular station with any specific piece of equipment. It is not our intention that these records should be arbitrarily maintained irrespective of their possible value or cost of maintenance. It is important that we maintain these records wherever it can be done without its being an unreasonable burden and where the data secured will be of value both to the station and to the Department.

Questions frequently arise where dependable cost records for motorized equipment are valuable. Careful cost records may frequently determine replacements. Dependable records covering the Department as a whole might very well give information that would have an important bearing in the selection of equipment. The assembling of these cost records where they have significance should be of value at the station, to the Bureau and to the Department.

B.P.I. Memo. 1195
April 23, 1941

--H. E. Allanson, Business Manager
Bureau of Plant Industry

Vol. 13 No. 10 May 15, 1941

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division, through which the staff at widely separated locations is kept informed of the progress of technical and scientific investigations at Beltsville and at various field stations. The News Letter also carries administrative orders and memoranda with necessary explanations and directions. Since the material used is often of an informal and confidential nature it should not be published without the approval of the Division. Often reports of field workers and others represent their personal opinions, and so are not necessarily the official and final word on the matters they discuss.

John A. Ferrall, Editor

Vol. XIII U. S. Horticultural Station, Beltsville, Md. No. 11
June 1, 1941

Cherry Leaf spot

"In seeking to combat the destructive leaf-spot disease of cherry nurseries, investigators of the U. S. Department of Agriculture have been able to kill two birds with one stone," announces a Department Press Release, discussing the work of E. A. Siegler and J. J. Bowman of our Beltsville staff. "By propagating cherry trees by piece root grafting instead of the usual method of budding, they have eliminated a season of costly spraying in the nursery, and at the same time obtained greater winter protection of the tender root, as the graft union itself is about 3 inches under ground.

"In piece root grafting a scion or piece of stem of the desired variety is grafted onto a piece of seedling root 3 or 4 inches long. In bud grafting, a bud of the desired variety is inserted into the seedling stem after it has grown in the nursery for one season, during which the foliage is exposed to attacks of leaf spot. Because of ravages of the leaf spot disease, most nurserymen have considered it inadvisable to use, in their bud grafting of cherry trees, the mazzard cherry stock used in the Department's experiments.

"Discouraged in their attempts to secure satisfactory control of the leaf spot disease in the nursery without numerous costly spray applications, Siegler and Bowman turned to the method of propagating cherries by piece-root grafting. This method has long been employed for apples and, in fact, was used for cherries over 40 years ago. At that time it was abandoned by the relatively few nurserymen who tried it because of poor stands. Results now indicate that with careful handling it is possible to get satisfactory stands with piece root grafting, although several more years will be required to test this method in commercial practice."

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"Hiley and Early Hiley pits are starting to harden, which indicates that Early Hiley peaches should start ripening in a little over five weeks," he writes May 12th. "Previous experience has shown that approximately one month elapses from the time Early Hiley pits are too hard to cut with a knife until the first picking of fruit is made. Two hybrids of Babcock x Hiley, which blossomed about a week earlier than Hiley, have pits that are almost too hard to cut now."

He had written May 5th: "No rain fell last week, consequently we again have to irrigate our young seedling peach trees. Peach fruits are still growing rapidly, but the lack of rainfall during April is showing up in our dendrometer readings. Peach tree trunks have actually shrunk in the past week, instead of growing larger...

$500.00 Dividend "In a previous report I mentioned that I had suggested to one grower that he crack his 25,000 Shalil seed and treat them with Semesan before planting. He had been unable to secure germination before. Last week I saw him and inquired about the experiment. 'I never saw anything like it.' he exclaimed. 'From 98 to 99 percent of the seed sprouted!' Our little suggestion, based on experience in handling Shalil seed, was worth at least $500 to this grower."

C. P. Harley, Wenatchee, Wash.

"As was anticipated, we again had an early growing season in Wenatchee," he writes May 13th. "Full bloom on most varieties occurred on April 18. The Delicious in our nitrogen experimental plots bloomed April 19th. Conditions for pollination were fairly good except for several nights when the temperature dropped below freezing. Many pear and apple blossoms were injured but not sufficiently to reduce the crop materially. In general, I think the set of Delicious is rather light throughout the district, not due to any factor except that they just did not bloom. With the heavy crop of Delicious last year the trees did not have vigor to form fruit buds.

"As near as I have been able to ascertain, over 400 acres of apple trees were sprayed with tar oil in the Wenatchee district this spring. At this date these trees are making a fair recovery in most cases and no permanent injury has been observed. Regardless of the information that was available to growers, the time of applying the tar oil ranged from the cluster bud stage to after full bloom--in fact I saw an orchard last week that was sprayed about three weeks following full bloom. The spraying was poorly done and the injury was quite severe where the spray was applied thoroughly. On these thoroughly sprayed branches I think the fruit will drop due to lack of leaves. However, many spots were missed and I think here the fruit will stick. I plan to observe this orchard again before drawing any conclusions from the effect of this late spray."

DECIDUOUS FRUIT INVESTIGATIONS

H. F. Bergman, East Wareham, Mass.

"After about two weeks of unusually warm weather it turned cooler early this week and on Wednesday night there was a heavy frost with temperatures as low as 16° to 20°F," says the report of the Cranberry Disease Field Laboratory for the week ending April 26th.

"The very warm weather preceding had started the growth of cranberry vines. The terminal buds had developed to an extent very unusual for this time of the year. As a result there was some damage to buds on parts of bogs that could not be covered with water but since most bogs have sufficient water for flooding the damage probably will not affect the size of the crop this year. Very few reports have come in but on one bog two-thirds of the buds on unprotected vines were killed. Dry bogs probably will not have any crop this year. Frosts also occurred on many bogs on Thursday and Friday nights but were not so severe as on Wednesday night.

"The condition of vines on all bogs from which the winter flood has been withdrawn is very good this year, much better than last year. Although there was some winter-killing of vines on high areas which could not be flooded only very limited areas are thus affected since there was plenty of water last fall to flood all bogs except those which are regularly operated as dry bogs. Last year winter-killing was very general because of a shortage of flooding water in the fall of 1939 so that many bogs were not flooded until late in January or in February 1940 which was too late to protect vines from winter-killing."

NUT INVESTIGATIONS

C. E. Schuster, Corvallis, Oreg.

"Orchards are varying widely in the time of blooming in the valley," he writes for the May 12-17 period.

"It does not seem to be tied up with the elevation, as some of the orchards on the highlands are considerably ahead of the lowlands. In some orchards there is an extremely wide variation in the time of blooming on the same tree. Some material may be out past full bloom while other buds are just opening out. It comes very close to being delayed foliation in many cases.

"The winter kill on filberts is becoming known more widely and recognized by most people. It is very erratic in the way it has occurred."

NUT INVESTIGATIONS

B. G. Sitton, Shreveport, La.

"Mr. Parson and I inspected some pecan trees on the property of W. L. Sibley near Shreveport," he writes May 10th. "We were called in regards to two large native trees which the owner thought dead. Upon inspection we found that probably 90 percent of the 1940 shoots were dead. The injury extended into the 1939 shoots and frequently into older wood. Buds are beginning to grow from the older wood which was still alive. These trees bore a very heavy crop of pecans last year, one of them producing 1,000 pounds of pecans. We do not know how late the leaves remained on the trees. The most logical explanation for the injury seems to be that the trees were weakened by the heavy crop of pecans and the temperature of 20°F. which occurred November 15th killed the shoots. Similar trouble has been observed elsewhere. We have seen large trees since visiting the Sibley place that are very late starting into growth."

F. N. Dodge, Shreveport (Robson), La.

Writing on May 10th he reports: "In past years I have done the budding on this station in the summer, with a poor set of buds resulting. This year the budding was done in the spring, using buds from two-year-old wood with excellent results. The set of buds will be close to 100 percent ... Since this season is the latest in the six years I have taken notes on the station, being more than three weeks later than the early season of 1938, it is giving some good information on the variation of the dichogamy of the pecan varieties with the different seasons. Stigma drying has not begun on all varieties yet, but the few that have dried show that the earliness of the season does affect the dichogamy. The protandrous varieties have been less so this year than in the early season of 1938."

He had written May 3d: "Bordeaux spraying on Stuart and Moneymaker last year has been effective in increasing the bloom of both staminate and pistillate flowers. Unsprayed trees have only a few staminate flowers and no pistillate flowers, while the sprayed trees have an excellent staminate bloom and a good pistillate bloom. Thus, bordeaux spraying on Stuart and Moneymaker last year was highly profitable. However, with Schley and Success the bordeaux spraying last year was not effective in increasing the bloom this year. I am unable to see any difference; they all have too light a bloom to pay the cost of spraying. Reference to last year's notes on time and extent of defoliation explains this different response of the varieties. The bordeaux sprayed Schley and Success trees had less than 30 percent of their foliage remaining on the trees and unscorched October 25th; while bordeaux sprayed Stuart and Moneymaker trees held their foliage in good condition until frost. Thus, even the bordeaux sprayed Schley and Success trees did not hold their foliage long enough to enable them to bloom this year."

NUT INVESTIGATIONS

John H. Painter, Cairo, Ga. (Tung investigations)

"A close examination of the record trees in the plot shows 14 percent of them seriously injured by the cold spell of November 16th," he writes May 10th. "This injury is restricted entirely to a particular type of tree, which is a heavy cluster type bearer and is dwarfed in structure. This particular type tree retains its fruit and foliage until very late and was caught by the November 16th freeze before it had started shedding leaves or fruit. The management of the Chase orchard feels that the way to correct this trouble is by an additional amount of fertilizer on those trees so injured. I am of the opinion that a rather severe pruning might be more effective. As a result of these differences of opinion, details have been arranged whereby we will be able to compare fertilizing with pruning and a combination of both.

"A small block of six year old budded trees were examined in Cairo and the results are the most encouraging of anything yet seen. The trees are extremely uniform in appearance and have a very uniformly heavy crop."

Ernest Angelo, Bogalusa, La. (Tung investigations)

"Slides have been prepared of material collected in March for the purpose of studying embryo development in tung," he writes May 3d. "A check on cold injury of various seedling progenies grown from seed of our 1938 selections was completed. Some of the progenies seem to be consistently more resistant than others.

"Pollen germination studies have been continued. Pollen stored on the flower in a paper bag in the refrigerator at 5°C. for 22 days gave 93 percent germination in 24 hours."

Rulon D. Lewis, Albany, Ga. (Soil fertility investigations)

"In orchards where the winter green-manure crops were cut in during the early part of April at the early bloom stage, the soil moisture is plentiful," he writes May 3d, "but in those orchards where the winter green-manure crops were cut in after they had reached full bloom and seed stage, the soil moisture is approaching the wilting point and, if the present dry period extends for many more days, serious damage may result."

John R. Cole, Albany, Ga.

"Winter injury is present in young orchards throughout South and Middle Georgia and is especially serious in the vicinity of Fort Valley," he writes May 10th.

NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"A mistletoe was recently found on a native wild hazel bush (Corylus californica) in the Alpine community in south Benton county, Oreg.," he reports May 3d. "As far as I have been able to ascertain from a search of available literature, the presence of mistletoe on the native wild hazel has never been reported heretofore from the Willamette valley, though it occurs commonly on oaks in this region."

HIGHLY SUCCESSFUL TUNG MEETING

Reports drifting in make it appear that the Seventh Annual Meeting of the American Tung Oil Association, held at Gulfport, Miss. late in April, was by a wide margin the most successful yet held. It was exceptionally well attended, which ought to be taken as a compliment by members of our staff, who were prominent on the program.

Dr. Ernest Angelo and Dr. H. L. Crane presented a joint paper on "The application of some fundamental principles of orchard soil management to the tung industry," and with Dr. Felix S. Lagasse, Dr. Angelo also had a paper on "The present status of tung breeding and improvement program." Dr. Harold Sell, Dr. Lagasse and Mr. Fred Johnston discussed "The time of oil formation in tung fruits"; Dr. L. P. McCann, "The structure of tung fruit;" and Mr. Samuel Merrill Jr. and Dr. George F. Potter, "The propagation of tung trees by budding."

Dr. R. S. McKinney and Mr. A. F. Freeman, Agricultural Chemical Research Division, Bureau of Agricultural Chemistry and Engineering, U. S. Department of Agriculture, Gainesville, Fla. and Bogalusa, La. presented joint papers on "The dehydration of tung fruit," and "The extraction of tung oil by a solvent process." Mr. R. D. Dickey, assistant horticulturist, Florida Agricultural Experiment Station, Gainesville, Fla. discussed "The importance of tung seed selection."

Mr. John H. Painter and Mr. Ralph H. Sharpe of our Division, from the tung laboratory at Cairo, Ga., told of "Preliminary experiments on the pruning and training of tung trees during the first year in the orchard;" while Dr. Matthew Drosdoff, of the Gainesville tung laboratory, discussed "Soils and tung trees."

A pre-convention tour of tung orchards was made early in the morning of April 24th, with an additional tour of experimental plots in the vicinity of Picayune, Miss. and Bogalusa, La. later in the day.

One grower who has attend all seven meetings, was firm in his opinion that this was far and away the best.

FIELD STATION SEMINARS

Down at the U. S. Regional Vegetable Breeding Laboratory at Charleston, S. C., Dr. B. L. Wade appears to have hit upon an amazingly effective means of broadening the scientific contacts of the station staff and building up the esprit de corps not only among the staff members and cooperating workers but neighboring scientist and technicians as well. This takes the form of station seminars, usually held twice a month, from 4 to 5:30 p.m.

We are listing the talks already given, from which you will see that Dr. Wade has enlisted the aid of staff members of the Charleston Museum, the College of Charleston, the South Carolina Medical College, the State Agricultural Experiment Station, the Bureau of Entomology and Plant Quarantine, and members of the Division and station staffs. This goes to make up a very pleasant and worth while scientific community and it is evident from the comments we have heard that Dr. Wade's "neighbors" enjoy and appreciate what is being done as much as do the members of the station staff. Take a look at the program so far and see if you do not agree that it is tophole in interest and helpfulness.

1. October 10. Mr. E. B. Chamberlain (Charleston Museum): Birds in relation to economic crops.
2. October 22. Dr. B. L. Wade: Biometry in relation to planning experiments.
3. November 7. Dr. C. F. Poole: Consumers' preferences as problems for the plant breeder.
4. November 19. Dr. Kenneth W. Hunt (College of Charleston): Is the carpel a modified leaf?
5. December 3. Mr. P. C. Grimball, Mr. H. M. Thomas, and Dr. S. A. Morell: Vitamins in relation to our eating habits.
6. December 19. Mr. C. F. Andrus: Diagnosing plant ailments.
7. January 21. Mr. Geo. B. Reynard: Tomato ancestors.
8. February 11. Mr. W. J. Reid, Jr. (Bureau of Entomology and Plant Quarantine): Destructive and useful insects associated with vegetable growing at Charleston, S. C.
9. Dr. F. L. Wellman: Plant exploration in Asia Minor. February 18.
10. March 4. Dr. J. Hampton Hoch (Medical College): Medicinal plant culture for national defense.
11. March 18. Dr. C. M. Clayton (S.C. State Station): Becoming acquainted with potato diseases.
12. April 1. Dr. W. C. Barnes (S.C. State Station): Special characteristics among lettuce varieties and their adaptability.
13. April 15. Miss Laura M. Bragg (former director of Pittsfield, Mass. and of Charleston museums): History of taxonomic botany in S.C.
14. April 29. Mr. E. L. Blitch, Jr: Irrigation in the Southeast.
15. May 13. Mr. J. M. Jenkins, Jr. (S.C. State Station): The development of cucumber and muskmelon varieties.
16. May 27. Dr. R. G. Harris (Medical College): The role of plant nutrition in bacterial leaf spot diseases.

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

C. E. Steinbauer (vegetable production)

"Visits were paid the State College, Laurel, and Crystal Springs experiment stations and certain commercial vegetable shippers, growers and processors in these localities. At Laurel we found a new commercial handling of cabbage. Half-grown cabbage plants at the 'cup' stage preceding heading were being cut and shipped as cabbage greens, a use not heretofore practiced commercially. In the Crystal Springs area, adverse weather earlier in the year caused nearly 100 percent bolting in cabbage. Although some heads are being cut, practically all have more or less elongated seed stems and losses to growers from this condition will be very large."

N. H. Loomis (small fruit investigations)

"During the week the strawberry market broke," he writes May 10th. "The Marion Strawberry Growers Association felt that for the remainder of this season it was no longer feasible to market cooperatively. The bulk of the crop in this section is now going to a freezing plant at Birmingham. During the entire strawberry season to date, the weather has been comparatively cool and there was only one picking at the station when the berries had the flavor they should have...The first strawberries were harvested at the station April 24th, but due to cool weather and some rain the quality was poor. Carlot shipments from the Marion section started the following week...The grape grafting machine set up according to instructions from Mr. Elmer Snyder does fine work and is going to make the work much easier."

J. M. Lutz (Handling, transportation and storage investigations)

"The early part of the week was spent at Hammond, La. in the strawberry producing section," he writes May 3d. "Mr. Fisher spent one day with me at this point. Truck shipments are becoming more and more important from this area. It is estimated that 10 to 12 percent of the movement thus far has been by motor truck. Motor trucks are able to get second morning delivery at points as far distant as Chicago and Milwaukee. Monday was a heavy day; approximately $200,000 worth of strawberries were shipped. Prices averaged slightly better than $2 per crate. Roughly, about one-fourth of the berries shipped are packed in fancy display crates. In practically all cases the berries in these crates outsold the standards."

"The bottom dropped out of the strawberry market Monday, May 5, when approximately 100 cars each were shipped from Louisiana and Arkansas in addition to some 20,000 crates from Wallace and Chadbourn, N.C. Shipments from Louisiana are dropping off rapidly and carlot shipments from Mississippi have ceased entirely because of the price, although there are still a good many fine quality berries in the field," he writes May 10th. "Many berries are going to cold packers at Hammond, La."

FOREIGN CORRESPONDENCE

I. Correspondence with Foreign Governments and International Government Organizations:

1. Routing. Scientific, technical, and routine bureau correspondence with officials and other representatives of foreign governments and international governmental organizations, unless such correspondence pertains to matters of Department policy, need not be routed through the Office of Foreign Agricultural Relations, but may be sent direct by the preparing bureau or office. This also applies to the transmittal of publications and documents.

2. Signature. (a). Scientific and technical matters and routine bureau matters. Such correspondence (including the transmittal of publications and documents) emanating from a single bureau or office may be signed by the official in charge of the work or by other designated official. It should be addressed and sent direct without forwarding through the Office of Foreign Agricultural Relations.

(b). Routine Departmental matters. Where correspondence of a routine nature (including transmittal of publications and documents) pertains to the work of more than one bureau or office, each bureau or office should prepare a memorandum on the questions pertaining to its work. Such memoranda should be forwarded to the Office of Foreign Agricultural Relations, where the final draft of the letter will be prepared for the signature of the Director of that Office.

II. Correspondence with the Department of State and the Foreign Service of the United States:

Correspondence received from the Department of State is generally of two types--letters signed by the Secretary or an Assistant Secretary of State, and unsigned memoranda.

Replies to correspondence signed by the Secretary or Assistant Secretary of State should be prepared for the signature of the Secretary of Agriculture.

Replies to unsigned memoranda should be prepared in the form of a memorandum to the Department of State for the signature of the preparing officer or other designated official; they should be forwarded through the Office of Foreign Agricultural Relations and carry the subscript:

Forwarded, Office of Foreign
Agricultural Relations

FOREIGN CORRESPONDENCE (continued)

Note: Exceptions in routine field correspondence to Canada and Mexico: Routine scientific and technical correspondence emanating from field offices may be addressed directly to officials of the United States Foreign Service stationed in Canada and Mexico and need not be transmitted through Washington.

III. General Instructions

Carbon copies: One carbon copy of all correspondence forwarded through the Office of Foreign Agricultural Relations should be supplied that Office for its files at the time the correspondence is transmitted for initialing.

Position of subscript. The subscript should always be placed at the lower left-hand corner of the last page of the letter: Like this--

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Forwarded, Office of Foreign
Agricultural Relations

Territorial correspondence. Attention is called to the fact that some bureaus and offices have been forwarding through the Office of Foreign Agricultural Relations correspondence with officers of other executive Departments stationed in territories or territorial possessions of the United States. This is not required by the Department's Regulations. Such correspondence should be transmitted through the heads of the Departments concerned, in accordance with Paragraph 1624 of the Department's Regulations.

The foregoing instructions have been issued by the Office of Foreign Agricultural Relations under the authority vested in it by Paragraph 1621 of the Department's Regulations, and they accordingly have the same effect as a Department Regulation. The requirements outlined should be carefully observed by members of the Division's staff at Beltsville and in the field who may have occasion to handle correspondence to which they apply.

The instructions are based on the observations of the past year and seek to impart a greater flexibility to the handling of this type of correspondence. The most notable change, of course, is that which eliminates the necessity of routing through the Office of Foreign Agricultural Relations all scientific, technical and routine bureau correspondence so long as such correspondence deals with the activities of but a single bureau or office and does not involve matters of Department policy.

ADMINISTRATIVE NOTES

Travel We wish again to call attention to the necessity of reporting dates, time of arrival and departure from points, and class of service furnished, i.e., whether sleeper, parlor car seat or coach, when sending in unused portions of tickets or reporting deviations from class of service called for in ticket.

A sample memorandum is as follows:

"I am transmitting herewith unused coupons from Madison, Wis. to Washington, D. C., of round-trip, first-class ticket between Washington, D. C. and St. Paul, Minn., No. 16159 Form 3X, which was obtained in Washington, D. C. on May 6, 1941, by Mr. John Doe, in exchange for Transportation Request No. A-1, 456,297.

"Travel was performed on the ticket as follows:

Left	Arrived	Class
Washington, D.C. 3:45 p.m. 5/6	St.Paul, Minn. 9 p.m. 5/7	LB & Pullman seat
St. Paul 3 p.m. 5/8	Madison, Wis. 10 p.m. 5/8	Coach

(Ticket not used from Madison to Washington, D.C.)"

In writing to the transportation companies it is necessary that the above detailed information be given to enable them to verify statements by reference to conductor's ticket collections and records. This can not be done by them unless they are able to determine the exact trains on which employees traveled.

Your cooperation will reduce the amount of correspondence and expedite settlement of transportation requests; and will be greatly appreciated by the auditors here!

Appointments: Medical examinations. The Civil Service Commission will in future accept the certificate of medical examination (Form 2413) when executed by any duly licensed doctor of medicine. Bureaus and offices are still authorized to request physical examinations in Washington, D.C. of appointees by Federal full-time medical doctors in the U. S. Public Health Service, but the Commission urges that the service of private medical doctors be utilized.

Such doctors should be cautioned to make full and complete reports in order to avoid serious inconvenience to the applicant in case he is given further physical examination later by a Federal medical officer.

Vol. 13 No. 11 June 1, 1941

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division, through which the staff at widely separated locations is kept informed of the progress of technical and scientific investigations at Beltsville and at various field stations. The News Letter also carries administrative orders and memoranda with necessary explanations and directions. Since the material used is often of an informal and confidential nature it should not be published without the approval of the Division. Often reports of field workers and others represent their personal opinions, and so are not necessarily the official and final word on the matters they discuss.

John A. Ferrall, Editor

Vol. XIII U. S. Horticultural Station, Beltsville, Md. No. 12
June 15, 1941.

Grape Varieties and Root Knot Nematods. "Root knot nematode studies with reference to their effect upon grape varieties are in progress at the U. S. Horticultural Field Station, Fresno, Calif.," writes Elmer Snyder. "The experimental program may be divided into five main phases:

"(1) Distribution of root knot nematode and infestation occuring on Vitis vinifera, grape varieties. Field studies indicate that root knot nematode is causing decided injury to commercial vinifera grape vineyards, especially when planted on the lighter soil types in the warmer valleys in California. Heavy infestations were obtained on the roots of 154 Vitis vinifera varieties when grown one year in soil known to be heavily infested with Heterodera marioni. Root examinations indicated that all of these vinifera grape varieties tested were very susceptible to root knot injury.

"(2) Susceptibility of grape rootstocks to root knot nematode. Sixty grape rootstocks, including 12 grape species and various hybrids of these species have been grown in soil heavily infested with root knot. These tests were made under two different field conditions and in separate inclosed units over a four year period. Variable degrees of infestation were noted on the roots of the different species and various rootstock varieties. These tests have led to further field trials and commercial planting tests which indicate that a few of the stock varieties have sufficient resistance to be of commercial value. Summarized results of this phase of the work are presented in United States Department of Agriculture Circular No. 405, "Susceptibility of grape rootstocks to root knot nematode," published in 1936.

GRAPE VARIETIES AND ROOT KNOT NEMATODE (continued)

"(3) Study of seedlings of selfed rootstock varieties.--Over 45,000 seedlings of the less susceptible rootstocks have been grown in cold frames containing soil heavily infested with root knot. Some seedlings have apparently been less susceptible to root knot injury than others, possibly indicating a segregation of a resistant factor. Further studies are in progress in connection with this lead. Field tests are also in progress with the more resistant types of seedlings.

"(4) Hybridizing of the less susceptible rootstocks.--Breeding work is in progress to produce, if possible, more resistant rootstocks. Some of the less susceptible rootstocks have been crossed and seedlings grown for further study in resistance to root knot nematode.

"(5) Collection of grape species.--Additional grape species are being accumulated and propagated for further work on the relative resistance of the Vitis species not previously studied. These species are also being accumulated in order to have available material for a breeding program to produce grape rootstocks highly resistant to root knot injury.

"The work so far has indicated that there is a variation in the resistance of the different grape species to root knot nematode. Some hybrid rootstocks have been sufficiently resistant to have value in commercial plantings in combating nematode injury. Work in progress indicates that it may be possible to produce grape rootstocks with higher resistance to root knot injury."

G. A. Meckstroth, Willard, N. C.

"The strawberry season got under way here April 29th, but the pickings the first week were rather light," he writes May 15th from the Coastal Plain Station.

"It appears that this year will be one of the shortest seasons we have had for years. The yield is dropping off due to lack of water. If we had had rain about a week ago it would have extended the picking season. During the past two weeks we had .02 of an inch of rainfall. For the most part, the weather has been hot and dry during the last two weeks, but on May 4 the minimum temperature dropped to 34°F. This did some damage to blueberries in some of the fields. In portions of the fields where the air drainage was a little better I have not seen any damage from frost.

"The blueberries are maturing rapidly and if we have a warm rain and continued warm weather, picking will probably begin in about two weeks. The damage from mites will be very small this year."

HOME GROWN APPLE SEED YIELDS DWARFING STOCKS

Dwarf apple trees, formerly grown on European rootstocks, may soon join the ranks of the All-Americans, if preliminary work by E. A. Siegler and J. J. Bowman of our Division is confirmed. Dwarf fruit trees are usually propagated by budding rather than by grafting to produce the desired variety. This prevents the stem from striking roots and thus nullifying the dwarfing effects of the rootstock. Gardeners and home owners who have limited space are quick to see the advantages in growing fruit trees that come into bearing quickly and that can be sprayed, etc. from the ground.

"With the supply of apple seed from France shut off by the war," says a Department press release concerning the work, "Siegler and Bowman have been studying the root systems of seedlings grown from seeds of domestic varieties, because the root system largely determines whether a tree will develop to normal size or become a dwarf. Dwarfing stocks have a profuse and excessive number of fine roots, generally growing near the ground-line of the young plants. The root systems of older plants are limited. Certain malformations, known as burr knots, occurring on the stems of many apple trees are associated with this dwarfing type of root system. Many of the imported dwarfing stocks exhibit these burr knots. Seeds from certain domestic varieties such as Northern Spy produce a relatively large percentage of rootstocks with root systems almost identical to imported dwarfing stocks. This suggests the possibility of an unlimited supply from which to make selections to produce all degrees of dwarfing. Rootstocks to regulate the size of mature apple trees have been imported from Europe for many years. Mainly due to the efforts of New York State Agricultural Experiment workers, the best stocks selected by English investigators are available from several nurseries in this country. This supply, however, is limited, and war-time conditions have necessarily resulted in a practical ban on future imports."

Apparently no clonal rootstocks for dwarfing purposes have been developed in this country, but Guy E. Yerkes of our Division has been one of the leaders in developing rootstocks for standard trees. The relative merits of dwarf-fruit culture are discussed by Mr. Gould in Leaflet 178, "Dwarf Fruits." One of the chief advantages of dwarf trees, apparently not generally appreciated, is that they offer a quick "turnover" of varieties, a greater flexibility to the orchardist. New bud-sport "models" of many apple varieties are frequently appearing. By bringing them into bearing in a relatively short time dwarfing rootstocks provide the orchardist with a practical proving ground to make tests under his local conditions. Obviously if the orchardist inadvertently plants a "lemon" (Don't laugh--there is a Lemon apple!) by its fruits he shall know it and discard it in 3 or 4 years time, thanks to the ability of dwarfing rootstocks to produce the goods quickly.

The relatively large percentage of seedlings from American seed showing dwarfing characteristics offer a splendid opportunity for selection. We used to think such a high percentage of dwarfing roots a curse, but it may turn out to be a blessing. Nurserymen had to discard too many seedlings, but we now know pretty well what varieties to use if we do not want a large percentage of dwarfing seedlings.

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"The first Mayflower peaches are expected to be shipped the middle of this week," he reports May 26th. "Last year the first car of peaches was shipped on May 25th, which means that this peach season will be several days later than last year's. Early Hiley peaches, however, appear to be only a day or two later in development than last year on this date. Pits are now hard on this variety.

"Drouth conditions continue to prevail, with only a little over two inches of rainfall having occurred since peach trees blossomed. Although corn and other annual crops are visibly suffering from lack of moisture, daily measurements show that peach fruits, now in the depressed growth period, are still increasing in size."

John C. Dunegan, Fayetteville, Ark.

"The district is badly in need of rain," he writes May 24th. "The spring grains are suffering from a moisture deficiency and strawberries have been definitely injured. In fact the strawberry season has been quite a disappointment to the growers. The price at the peak of the season was very low ($1.75 per crate for best quality berries) and the dry weather markedly curtailed production. As the season closes prices have advanced to $3.00 a crate but the berries are running small.

"The effect of the November 1940 freeze is becoming apparent in the peach orchards. Killing of entire trees is not common but the death of individual limbs and the wilting and slow collapse of other limbs is rather general in most peach orchards. Eventually of course many of these weakened trees will succumb."

H. F. Bergman, East Wareham, Mass.

"Blueberries are now in full bloom and all varieties, except Rubel, in the State Bog planting have a heavy crop of flowers," he writes from the Cranberry Disease Field Station for the week ending May 24th.

"Cranberry vines are making rapid growth on all bogs from which the water was taken off early. On some of these bogs the earliest flower buds are now visible. The State Bog this year is in far better condition than it was last year, although a little injury from oxygen deficiency during the winter flooding period is evident."

STRAWBERRIES

"Out of the multitude of strawberry varieties," remarked the American Fruit Grower sometime back, "has risen one variety that is the unanimous choice of all the nation's strawberry growers.,,The Blakemore reigns supreme over all."

The Blakemore, of course, was originated as a cross between the Missionary and Howard 17 (Premier) by Dr. Darrow and his associates in 1923, working at Glenn Dale, Md. on strawberry breeding. Now, while the rest of the world has been hustling to produce something as good as the Blakemore--we have handed out something better!

"Recommended for finer flavor, and on the commercial market for the first time last year, is the Fairmore strawberry, a variety originated by the U. S. Department of Agriculture and suitable for the 'second-early' strawberry belt extending from the central Atlantic coast area westward to Arkansas and Missouri, says a news item. "The breeders anticipate that Fairmore will partially replace the Blakemore, one of its parents and a variety so good that in 11 years it had come to first rank with the greatest acreage of any strawberry variety. The new Fairmore has most of the good points of the Blakemore--and has better flavor, is tastier." It is a cross of the Fairfax and Blakemore.

PRUNES COMPETING WITH STRAWBERRIES?

The recent suspension of the venerable Boston Transcript reminds us of a story it once published concerning the apparent competition of the prune with the strawberry. A tourist passing through a small town noticed a sign advertising the ANNUAL STRAWBERRY FESTIVAL. Some additional wording was penciled below the larger lettering and he went up closer and read: "Because of the present high cost of strawberries, prunes will be served."

STRAWBERRIES AND THE LAW OF GRAVITY

Another problem that we shall have to pass along to Dr. Darrow concerns the strawberry in relation to the law of gravity. The apple has won something of a reputation by demonstrating the law of gravity, but what about the strawberry--how have the strawberry growers managed things so that the strawberry is able to ignore the law of gravity?

At least one of our observing correspondents is concerned over this. He insists that he has been looking into the matter carefully and he finds that no matter how the strawberries are packed, the larger berries always work to the top of the box!

NUT INVESTIGATIONS

Felix S. Lagassé, Gainesville, Fla.

"Dr. Sell reports continued work on routine analyses for the determination of oil, carbohydrates and nitrogen in various tung tissue," he writes May 24th. "Some time has been spent in compiling the results of our work on the effect of chemical treatments in prolonging dormancy in tung buds. Our work shows that indole-3-acetic acid and alpha naphthylacetamide in lanolin emulsions were the most effective. According to Dr. Potter's report on the effect of low temperature studies on tung trees, we would be able to prevent injury from light frosts for a week longer than the untreated controls...

"The work with A. montana has been actively carried on by Dr. Reuther and Mr. Dickey and as previously reported, small nursery plantings of A. montana and A. montana x A. fordi hybrid seed were established in various parts of the State during the second week in February. An inspection made about three months later revealed rather disappointing results. In the best nurseries (located at Brandenton and Babson Park) only about 50 to 60 percent germination of A. montana seed was obtained, while 60 to 80 percent obtained with the hybrids. These latter seemed to germinate sooner than the montana. Cracking the shells had no apparent effect on germination at all under the conditions of these studies.

"It is not the percentage of germination which is so disappointing, but rather the percentage of survival of the seedlings after germination. A disease which resembles the common damping-off disease of vegetable seedlings in superficial appearance has played havoc with our nurseries, so that the prospects of obtaining more than 25 percent survival of the germinated seedlings are not good. In one location, the nursery is practically a total loss already, but in other locations no doubt some usable nursery stock will be available for transplanting next season."

F. N. Dodge, Shreveport (Robson), La. (Pecans)

"This year has been the latest of the past six years, and 1938 was the earliest. The difference is about three weeks. Since the other four seasons, which have been intermediate in their time of growth, have also been intermediate in the dichogamy of the varieties, there is no question but that on this station the dichogamy of the pecan varieties has varied with the different seasons."

NEW PUBLICATIONS

FB 1860, "Gladiolus Diseases and Insects," by Lucia McCulloch and C. A. Weigel (EPQ); FB 1872, "House Plants," F. L. Mulford; Tech. Bul.759, "Physiological Investigations on Fall and Winter Pears in the Pacific Northwest," by Fisk Gerhardt and Boyce D. Ezell; and Tech. Bul. 770, "Investigations on the Storage of Nuts," by R. C. Wright.

Circular 582, "Avocado Diseases in Florida," H. E. Stevens and R. B. Piper.

NUT INVESTIGATIONS

George F. Potter, Bogalusa, La. (Tung investigations)

"Observations in orchards throughout the entire tung belt indicate that the cold damage that occurred on November 15 and 16, 1940 and the resulting reduction in the crop for 1941 are greater than we first anticipated," he reports May 17th. "In the western part of the tung belt we are still finding orchards that promise to have a higher yield this year than they had in 1940. The writer recently visited an orchard in East Texas, two orchards near DeQuincy, La., and one near Magnolia, Miss., all of which have by far the largest crops they have ever borne. However, the bulk of the production is in those orchards that have the oldest trees and these are mainly in Florida, where low temperature is most extensive and most serious. Everything considered, it now looks as if the crop this year can not exceed 75 or 80 percent of the 1940 production.

"It is an ill wind that blows nobody good. The mid-November cold snap has caused tung growers no end of headaches but it is affording the members of our staff a marvelous opportunity to study killing of the terminal buds, twig killing, crotch injury, and collar rot and other forms of cold injury to tung trees. Notes are being taken and an extensive record in kodachrome is being made...

"Samples taken by Mr. Moore of the winter cover crop on 12 large soil management plots at the Cooperative Tung Farm show that on the average those plots fertilized with 500 pounds of basic slag per acre produced about 5.9 tons of vetch per acre, green weight. Plots fertilized with 500 pounds of 2-8-4 fertilizer produced only 3.3 tons. This difference has been evident to the eye since early in the spring.

"That basic slag gave better results with the vetch cover crop than what was presumed to be an equivalent amount of phosphorus in the form of super-phosphate, was evident in several orchards last year. Accordingly in the fall an experiment was set up by Dr. Angelo and Mr. Kilby to determine, if possible, what ingredient in the slag was responsible for the remarkable difference observed. Phosphurus in the form of super-phosphate and in an amount equivalent to that contained in 500 pounds of 8 percent basic slag per acre was used alone and in combination with calcium, magnesium and manganese. The experiment was replicated four times on the Cooperative Tung Farm in Pearl River County, Miss., four times in a tung orchard near Covington, La., and four times in another tung orchard near Pine Grove, La. With a total of 12 replications in factorial design, a very accurate analysis has been obtained. The super-phosphate alone gave a yield of about 4.1 tons of green matter per acre. Phosphorus plus calcium produced 5.1 tons per acre. The addition of 140 pounds of manganese sulphate per acre did not affect

NUT INVESTIGATIONS

George F. Potter (continued)

the yield in the slightest. Where 500 pounds per acre of epsom salts were used with the phosphorus, the yield was actually about one-tenth of a ton lower than where no magnesium was used. However, this difference is not statistically significant. The 500 pounds of basic slag produced a yield of 6.6 tons of green matter per acre, far better than any other treatment. Unfortunately the slag that was used was not analyzed. The difference in yield between the slag and the best other treatment, phosphorus plus calcium, may be due to the fact that the slag carried more than 8 percent phosphorus.

"Dr. Fernholz has concluded his work for this season on the storage of tung pollen. Perhaps the most outstanding fact brought out in these studies is that the viability of the pollen is greatly affected by the stage at which the blossom is picked. Pollen from buds removed from the trees just before anthesis gave the best germination on artificial media and when stored in an ordinary refrigerator remained viable for about 21 days. Pollen from blossoms that were fully opened when picked gave some germination on the 18th day, but throughout the period the percent that grew was far below that from corresponding blossoms picked in the bud stage. The maximum germination for the pollen from the open flowers was 50 percent, attained 4 to 6 days after removal from the trees. The maximum germination of the pollen from the buds was 60 percent, attained after 10 to 12 days in storage. By that time germination of the pollen from open blossoms had dropped to about 10 percent. Pollen from blossoms that had already fallen to the ground never gave good germination, dropping from about 13 percent at the time of collection to a possible 3 percent at the end of 9 days.

"Although in 1940 pollen stored in the ice box was found to keep longest at a high humidity, this year pollen stored at 95 to 100 percent relative humidity molded badly. The best results were obtained with the humidity ranging from 40 to 60 percent..."

Clifton W. Van Horn, Yuma, Ariz. (Pecans)

"Figures available now on oil content of pecans where we controlled aphis last year as against no control add considerable evidence to our conception that aphis have been a very serious factor contributing to poor quality nuts," he writes May 24th.

"With Burkett trees given cultural treatments designed the best we know how to give good quality and aphis controlled in addition, the percentage of oil in the kernel was 71.9; whereas those given the opposite conditions with no control for aphis, had only 40.8 percent oil."

EXTREMES OF HEAT AND COLD DAMAGE NUT TREES AT BELTSVILLE

"Spring temperatures, ranging from extreme heat, some days with and others without hot drying winds to barely below the freezing point, caused considerable damage to new shoots on various kinds of nut trees at the U. S. Horticultural Station, Beltsville, Md. during April and May," reports C. A. Reed under date of May 24th.

"On April 19th and 20th temperatures reaching 90° and 94°F. plus strong gales, burned the leaves and tender new shoots on practically all kinds of nut trees that were then just bursting into leaf. Those that had come out earlier and which were therefore less tender, and those that came out later, were unhurt.

"During the early morning hours of May 12th, a minimum temperature of barely 30°F. killed blackwalnut, filbert and chestnut shoots that were then in the critical stage. Also staminate and pistillate flowers of the walnut were greatly damaged. All trees so affected were in one of the lower levels of the station farm. In this particular orchard there was hairy vetch about knee high between the rows. The damage to the new shoots from this low temperature was fully as severe as that caused by the burning earlier in the season.

"Across the station grounds, but less than half a mile away, tomato plants that had been set out the day before were unhurt. The elevation where these tomato plants are growing is a few feet higher than the nut orchard tract mentioned, but certainly not more than five or ten feet higher. Nut men are a bit puzzled since they are not willing to concede that Mr. Porte has already bred tomato plants hardier than nut trees!

"It is possible that if comparative temperature records were available for the two points it might be shown that the nut orchard is habitually more frosty than the point where the tomato plants are now growing. However, the tomato land was bare and it seems more probable that it had absorbed enough heat during the previous day to enable it to serve as a sort of warming oven during a few brief but critical hours. The ground in the nut orchard, however, had been prevented by the presence of the vetch from absorbing the maximum amount of heat. According to E. V. Shear, this is a recognized principle on the West Coast.

"Fortunately most of the trees that were injured by either the extreme heat or the cold, and even those affected by both, are pushing out new shoots and should pull through unless they suffer other reverses of some kind.

"Incidentally, this is proving to be one of the earliest and dryest spring seasons on record in the vicinity of the Beltsville station and the temperature for April and May several degrees above normal. There have been no good rains from the end of March up to the present writing--May 24th."

SEEDING ON A LAYER OF SPHAGNUM MOSS PREVENTS "DAMPING OFF" DISEASE

By planting seeds on a layer of sphagnum moss as an aid to germination, the Division of Plant Exploration and Introduction at its Plant Introduction Garden at Glenn Dale, Md., has for years avoided practically all loss from "damping off" of seedlings, one of the most troublesome difficulties encountered in greenhouses and in amateur efforts to grow plants from seeds. In most of the germination work the living moss gathered from neighboring bogs has been used for starting the seeds, says a June 1 press release, but recent tests have shown results as good by use of the dried moss, readily obtainable from florist supply houses.

"Starting seeds in sphagnum moss--instead of in soil as a medium for germination--has become the routine method with nearly all the great variety of seeds germinated each year as part of the plant introduction work, mainly because of the convenience and reliability of germination, and it was not until last year that Claude Hope, V. T. Stoutmeyer, and A. W. Close of the Bureau of Plant Industry made carefully controlled comparison plantings of the sphagnum moss, living and dried, and other methods for germinating seeds, including both sterilized and unsterilized soil, sand, and sand and peat. Even when tested under conditions that insured some damping off infection, the losses of seedlings were unimportant because the moss inhibited transmission of the disease which did not spread rapidly from plant to plant as is the usual experience of growers.

"In testing the damping off control by sphagnum moss, the investigators compared many combinations of sterilized and unsterilized materials in flats placed side by side in the greenhouse or with several media in a single flat, also in beds in frames. Control by planting on a three-fourth inch layer of shredded sphagnum moss was as effective as by soil sterilization or by a seed treatment which has been recommended for the prevention of damping off. For practically all seeds tested--many of them known to be susceptible to attack by the fungus--results were satisfactory both as to germination and freedom from disease. Unsterilized soil covered by a three-quarter inch layer of the moss which had been rubbed through a coarse sieve to break it into small pieces proved as safe a seeding medium as soil carefully sterilized. Furthermore the sphagnum could be freely watered without harming the seedlings.

"In reporting results, the authors comment: 'For the home gardener and the small greenhouse operator, the use of sphagnum obviates the expense and inconvenience of soil sterilization and the uncertainty of chemical treatment in seedling cultures. When it becomes necessary to germinate seeds with which the gardener is not familiar, sphagnum is helpful. Should seeds fail to germinate immediately, they are readily accessible for examination and recovery, if need be, for stratification or other stimulative treatment..."

EMPLOYMENT UNDER LETTER OF AUTHORIZATION

It is again emphasized that employment under letter of authorization must be restricted in a fiscal year not to exceed 30 days, or 240 hours, for skilled labor, which, in addition to mechanics and those in the building trades, includes clerical workers, laboratory aides, and scientific assistants. The maximum for unskilled labor is 90 days (720 hours), and this must be difinitely authorized in your letter of authorization. It is definitely up to the officer concerned to adhere to the foregoing and to ascertain when engaging employees whether they have worked under letter of authorization for any other activity of the Bureau or Department, since such previous service must be weighed against the time allowed. Payment will not be approved for service beyond the authorized limit of service under letter of authorization. Appointments for such unskilled laborers should be requested as soon as it is evident that a person's service will be required beyond a period of 30 days. Such appointment may be at an hourly rate (when actually employed), both by the day, or on a monthly basis.

It is suggested that you check your letter of authorization and if the authority granted thereunder is not sufficient to cover your needs take up the matter with our Business Office. The most satisfactory method so far found to prevent employing a laborer more than the number of days allowed under letter of authorization is to keep a labor card for each employee, beginning with July 1st of each year. All of his services under the Bureau of Plant Industry, whether for this Division or other Divisions, should be listed on this card, and the card consulted before each period of employment.

The administrative office of the Bureau has emphasized repeatedly the fact that employment under letter of authorization is permitted only for intermittent services which cannot be satisfactorily covered by an appointment.

LEAVE

Leave: Temporary and Indefinite Employees.--The Comptroller General has ruled that "indefinite employees" as defined in the annual and sick leave regulations, whether or not they be paid on the basis of "when actually employed" are not entitled to annual or sick leave for a fractional month's service.

Where such an employee is absent on leave without pay, after working part of a month, for a fraction of a day, or a day or more, the continuity of employment is broken so as to preclude his earning leave for the preceding fractional month, and a new month's period is begun when duty is resumed.

ADMINISTRATIVE NOTES

Telephones The Business Office should be notified promptly whenever any change occurs in telephone service after the contract is completed. This is essential in order that a supplemental contract may be prepared and executed on Standard Form 40 to confirm the change or changes. This procedure is necessary in connection with changes in telephone numbers as well as in rates, etc., so be sure to send us word if your telephone number is changed.

Automobiles In determining whether the purchase price of a passenger-carrying motor vehicle, exclusive of transportation cost, is within the statutory limit, the transportation cost that may be deducted from the destination bid price is the actual cost of transportation at the lowest available rate of the finished vehicle from the designated assembly plant or other designated point of origin from which it is acturally shipped as a finished vehicle to the point at which it is delivered to the Government--and not the transportation cost from some factory where the individual parts are manufactured.

Where both the destination and shipping point prices quoted by a bidder exceed the statutory purchase price limitation on passenger-carrying motor vehicles, the bid as a whole should be rejected without consideration of transportation costs from shipping point to destination.

In determining whether the purchase price of a passenger-carrying motor vehicle, exclusive of transportation cost, is within the statutory limit, the only transportation cost for consideration is the actual cost of transportation at the lowest available rate, whether Government, commercial, or other rate available to the bidder from the point of origin of bidder's selection from which delivery is to be made to destination.

The fact that a strict application of the statutory purchase price limitation on passenger-carrying motor vehicles may upon occasion result in a slight excess cost to the Government does not justify a disregard of its mandatory provisions.

Finger Prints On May 16, 1941 the Civil Service Commission advised the Department that it is not necessary to secure a fingerprint on the Certificate of Medical Examination, Form 2813, despite instructions on the certificate to the contrary, so long as the signature of the appointee appears in the space provided therefor.

UNITED STATES DEPARTMENT OF AGRICULTURE
Office of the Secretary

May 12, 1941

MEMORANDUM 880, SUPPLEMENT 1.

MINIMUM WAGE POLICY

It is the purpose of this supplementary memorandum to state more explicitly the minimum wage policy of the Department and to prescribe certain conditions which will insure uniformity in carrying out the policy originally stated in my memorandum of October 19, 1940.

Employees on the pay roll of the Department whose compensation is not governed by the Classification Act of 1923, as amended, shall be paid not less than 30 cents per hour worked, except as provided in the next paragraph. In addition, employees paid from funds allotted or controlled by the Department shall be paid not less than 30 cents per hour worked, except as provided in the next paragraph.

Collaborators, agents, and consultants who are appointed without compensation or with only nominal compensation shall be exempt from the minimum wage requirement. Handicapped or partially disabled workers, those employed outside the limits of the continental United States, and those employed under cooperative agreements, articles of association, advices of allotment and authority, or other basis from funds allotted or controlled by the Department may, with the prior approval of the Director of Personnel and subject to such conditions as he may prescribe, be paid less than 30 cents per hour.

Any method of payment, such as hourly, per diem, or piece work rates, may be used, provided it satisfies the minimum wage requirement. For example, those regularly employed 8 hours per day, 44 hours per week, should ordinarily receive not less than $2.40 per day, $13.20 per week, $686.40 per year. The cost of furnishing employees with food, living quarters, or other facilities may be included as a part of the wage paid. In addition to being paid for time actually worked, employees shall also be paid at their regular rate for all holidays, sick leave, and annual leave to which they are entitled by law or executive order.

Cooperative agreements, advices of allotment and authority, and similar other working arrangements entered into, renewed, or prescribed henceforth shall provide for compliance with the minimum wage policy of the Department; and agreements or arrangements now in effect shall be amended to provide for such compliance as soon as is practicable. Employees of the Department who may be receiving less than the prescribed minimum wage shall, unless exempted or excepted by the Director of Personnel in accordance with the provisions of this memorandum, be increased to the minimum on or before July 1, 1941.

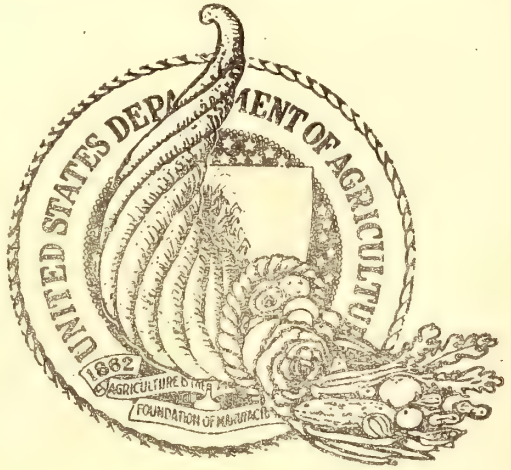
Claude R. Wickard,
Secretary

Vol. 13 No. 12 June 15, 1941

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division, through which the staff at widely separated locations is kept informed of the progress of technical and scientific investigations at Beltsville and at various field stations. The News Letter also carries administrative orders and memoranda with necessary explanations and directions. Since the material used is often of an informal and confidential nature it should not be published without the approval of the Division. Often reports of field workers and others represent their personal opinions, and so are not necessarily the official and final word on the matters they discuss.

John A. Ferrall, Editor

Vol. XIII U. S. Horticultural Station, Beltsville, Md. No. 13
July 1, 1941

Dr. Magness Takes over! As you will note from official announcements elsewhere in the News Letter, Mr. Gould is retiring September 30. Because of accrued leave, however, he is actually turning over the job to Dr. Magness on July 1. So we do not have to take back the statement we had already written in connection with the picnic, that it's difficult to keep JRM out of the spotlight!

We have here, incidentally a striking example of the job seeking the man, only the word should be pursuing! Back in 1929 after Dr. Auchter had talked us into taking over the News Letter "for a few weeks," we were introduced to Dr. Magness for the first time. After he had returned to his office in the adjoining room, Dr. Auchter expressed his pleasure over having obtained his services, and predicted a brilliant future for him in the Division. As those of us who have watched him on the baseball field know, Dr. Magness is a pretty hard man to tag and so, his first love being research, he has managed to evade a major administrative job for a dozen years! It is typical of the man that in the national emergency he cheerfully puts aside his own preference and takes over the new responsibility, a responsibility he is admirably equipped to face because of his splendid background of training and accomplishment, for this son of Oregon has become one of the outstanding specialists in the deciduous fruit field. He worked with the Department for a short time after graduating from Oregon State College and then joined the Chemical Warfare Service in the First World War. He came back to us in 1929 after some highly successful years as head of the horticultural department of Washington State College. He will be succeeded as head of the deciduous fruit investigations work by that likeable Irishman, Dr. Frank P. Cullinan, who is perhaps the greatest living illustration of the influence of environment, since a single word describes both him and his work--"Peach!"

"Keep 'em Flying!"

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"A rain of 1.58 inches proportion fell at the laboratory yesterday, the first since May 8," he writes June 9th. "It apparently was general enough to cover most of the orchards in this section, except the large Pearson orchards. The drouth situation was becoming serious, for late pickings of Mayflower peaches would not average 1-3/4 inches in size, and an estimated 25 percent of Early Hiley peaches had fallen off in some orchards in the last 10 days, probably because of dry weather. This drop was general in all Early Hiley orchards we have seen or heard about, though not as heavy as 25 percent in the more vigorous orchards. Hiley trees began to drop fruit lightly last week, but Elberta peaches were hanging firm. Also all other varieties in our variety orchard had none of this late drop. Fortunately many of the Early Hiley orchards had too heavy a set, so that the loss will serve more as a late thinning than a serious crop reduction. Were the drop to continue, however, it would be the cause of much concern."

He had written June 2: "The first basket of peaches was shipped from Georgia last Monday, and the first carload on Friday, May 25, five days later than last year. Several of our seedling peaches are well along in their final swell period, but probably will not be ripe for another 10 days. The weather continues dry and hot. Only 2.17 inches of rain have fallen at the laboratory in the last two months, hardly enough to mature a peach, but the Mayflower I have seen are not much below normal in size and are well colored."

G. A. Meckstroth, Willard, N. C.

Writing from the Coastal Plain Station on May 31 he says: "The blueberry picking season started the last week in May and the Cabot, June and Rancocas are being picked. The dry weather has reduced the size of the berries and it is necessary to ship a good share of the fruit under the "Star" brand. Last year very little fruit was shipped under this name.

"The 'stunt' disease of blueberries seems to be on the increase. I have noticed this specially on 8 rows of Scammel variety. These are old plants--in the neighborhood of 10 years old. Last year I tagged two young plants of Scammel variety in a young field. They are now badly affected by this trouble. They bear only a very small amount of inferior, undersized fruit. I tagged one plant last year as doubtful. There were a few spindley branches with the typical small leaves, but not a sufficient number that I could be sure that this was the trouble. There is no question about it now, since the greater part of the bush is involved."

DECIDUOUS FRUIT INVESTIGATIONS

C. P. Harley, Wenatchee, Wash.

"Mr. Reeves has become alarmed about a rapid spread of Rusty-mottle of cherries from his infected trees to the check trees this year," he writes June 5th. "It appears that this disease is so virulent and has spread so rapidly that he is contemplating removing or destroying all trees in this experimental plot. In addition to several other new symptoms appearing on commercial trees in the Wenatchee district there appears to be a considerable number of trees affected with Rusty-mottle in Yakima also.

"On May 14th Mr. Reeves, Dr Lindner and myself made a trip to Manson to observe peach trees that were reported to be affected with Western X-disease. At this early date we did not expect to find symptoms. However, on some dehorned peach trees the new sprouts showed typical symptoms of X-disease. This early appearance of this trouble was very interesting, although probably in line with what has been found in other tree virus diseases. Mr. Reeves found the first apparent primary symptoms of Western X-disease of peach appearing on his young budded trees in his experimental plots at the County Farm on May 22d.

"An unusual condition was found on cherries this year which has been rather interesting. On certain trees, principally of the Bing variety, a very high percentage of fruits attain half their size and then growth ceases. The epidermis takes on an appearance of having been injured by frost. These fruits soon show wilt and drop. Upon examination it was found that these fruits all contained abortive embryos. We have concluded that the condition is probably the result of injury to the embryo by successive nights of temperatures below 32°F. shortly after pollination. This is the first time that I have observed the condition to this extent and it also happens to be in line with temperatures during blossoming and after. Also it is quite general throughout North Central Washington, including Yakima. It is probably not severe enough to materially affect the total tonnage, however."

R. B. Wilcox, Pemberton, N. J.

"The June drop of Cabot blueberries has been very heavy in some fields, sufficient to reduce the crop of this variety in spots, and Pioneer has also been hit rather hard," he reports June 15th, writing from the Cranberry and Blueberry Disease Laboratory. "This is apparently the result of low temperature early in the season. Nevertheless, the crop of the State will be large. One authority has estimated that the crop of the State will be 50 percent larger than that of last year, but most growers feel that the increase will be much more moderate. There will be a few scattering berries picked on the 16th, but the harvest will not start in most fields before the 18th or 19th."

DECIDUOUS FRUIT INVESTIGATIONS

H. F. Bergman, East Wareham, Mass.

Writing from the Cranberry Disease Field Laboratory on May 31st he said: "A grower who came in during the week reported his experience with spraying for rose-bloom. In 1939 he had an area that was very badly infected. He sprayed the area with bordeaux. Rosebloom appeared in the same area again last year but was only about half as bad as it was in 1939. The area was again sprayed with bordeaux. This year the infection is light, but he intended to use bordeaux again hoping to clear it out entirely."

J. R. Kienholz, Hood River, Oreg.

"It may be of interest to know that Mr. Childs has discovered the cause and control of pink-end of pears," he states in his report for May. "A species of aphid native to Amelanchier (Serviceberry) was found to be the cause, while he obtained control of the insect with either an oil or combination of oil and lime-sulphur at the dormant period. The insects were first discovered on the Anjou where they caused a mottled fruit due to the yellowed feeding punctures commonly on the cheek. When the Bartlett orchard known to produce pink-end fairly consistently was examined, the aphids were found in large numbers feeding in the calyx ends of the pears. Of course additional proof is desired in caging experiments and Mr. Childs states that he now has the aphis 'in the bag.'

"The pear crop estimate has dropped sharply due to a heavy drop after the Anjous appeared to have set. One to four fruits per cluster appeared to have set on many trees and this is always a poor sign, for a drop usually occurs. Unlike other years, however, the drop occurred after the fruits obtained their red color and the heavy drop is just occurring now at Parkdale where it appeared a good crop was in sight. A small crop of large sized Anjou pears appears to be the prospect at present. It is believed our heavy frosts before and during the bloom were responsible for much of the condition even where visible injury is not apparent.

"The cherry crop will be similar to pears in being large sized but light. The Lambert appears to be heaviest and Royal Ann the lightest. Some brown rot is appearing and if cracking occurs much loss from the fungus may be expected.

"The month of May must be considered as very wet. Several periods of rain occurred. Over 2 inches had fallen by the middle of the month and showers continue at the end of the month. Less than an inch of rain is now necessary to break the record for the month of May. Mostly cool temperatures have prevailed but several hot days occurred, for variety."

SUBTROPICAL FRUIT INVESTIGATIONS

H. E. Stevens, Orlando, Fla.

"Weather conditions in Florida the past winter and spring have severely affected the crops of tropical and subtropical fruits, as well as most of the vegetable crops grown in the State at that time. Continued low temperatures from the middle of December through April and an excessive amount of rainfall during a greater part of that period, which is normally dry and warm, have interfered materially with the flowering habits of our tropical fruits. This condition has prevented normal blooming and fruit setting in many cases, especially in regard to papayas, mangos, and avocados.

"As a result, the avocado and mango crops for the coming season have been seriously affected, and only a small percent of a normal crop can be expected. Present estimates place the avocado crop at not to exceed 40 to 50 percent of normal, and in some sections the percentage is even lower. The crop will consist mostly of the late maturing varieties such as Lulu, Taylor, Booth, and Nabal. Lack of rain and drought conditions during the past few weeks are causing considerable drop of the fruits that have set. Our weather records, taken at the experimental farm, show that since April 4 there has been only about 2 inches of rainfall to the present date--May 27. Evaporation has been about 14 inches, or a loss of 12 inches during the period.

"Normally the avocado bloom begins to appear in late January or early February, and the flowering period may extend for two or three weeks. This season the bloom was delayed a month or six weeks in opening. A very profuse bloom appeared in most cases but very little fruit set, owing to the excessive rains and cool weather during that period. The avocado has but one set or flush of bloom each season, and if the fruit fails to set from this there is no crop for that season.

"The commercial mango crop in Florida this season will be a very small one, and in some sections of the State no fruit will be available for shipping. In most of the mango growing sections there are no fruits on the seedling or turpentine varieties which usually set some fruits each year.

"The mango may produce three or four sets of bloom during a season. The most desirable fruit comes from the early or first bloom which usually open flowers in late December or early January. A second bloom may appear and opens flowers in late February or early March. If no crop has set from the first bloom, a good set of fruit may result from the second. A third or late bloom may appear in April, and this is often the heaviest or most profuse in flowers. However, fruit from this bloom rarely sets or fully matures. The cool wet weather this season prevented any appreciable set of fruits from the first and second bloom, and no fruits resulted from the third bloom. Thus the crop this season, especially the Haden which is practically the only variety shipped, has been reduced to a few scattering fruits on trees from the second bloom, in the better protected localities."

NUT INVESTIGATIONS

Milo N. Wood, Sacramento, Calif.

"It is clear that the almond crop will be very light this season," he writes June 7th. "Lack of pollination is the cause of the shortage. While there is some loss due to Brown rot, shothole fungus, and diseases, in most instances the set was so light because of lack of pollination that little direct loss of nuts can be attributed to the diseases, the main damage being to the twigs, buds, and foliage. This year was a valuable one from an experimental standpoint in showing the importance of insect pollination in the almond. No doubt this year will wake up any apathetic growers there may be to the necessity of planning ahead to insure adequate pollination by interplanting proper varieties and providing bees to transfer the pollen. Nevertheless it is a calamity to many of the growers to have practically no income from their orchards this year. Seasons like this generally result in considerable neglect to the orchards, which naturally reduces the vigor of the trees and next year's crop. Some of the growers feel that they cannot afford to keep the orchard up for a whole year without any return. Lack of pollination this year has been rather universal over the State because of heavy prolonged rains and winds. Many of the habitually heavy bearing orchards have the lightest crop this year. Orchards generally suffering from drought had less rainfall this year than some of the others and therefore have somewhat better crops. I think without question the crop will be lighter this year per acre on an average than ever before. At least this is the case in the orchards I have examined thus far.

"In addition to pollination, considerable damage has been done to trees from standing water. In some cases whole orchards have been drowned out and in many other cases parts of the orchard have suffered. It is noticeable that even in cases where trees appear fairly healthy at this time, following the standing water, they still have an appearance which indicates they are having trouble in recovering. In such cases, perhaps, it is just as well that they are not heavily loaded with nuts. From what I have seen it appears that peaches and apricots have suffered to even a greater extent than almonds so far as death of trees from too much water is concerned. In the case of the almond it appears that most of the nuts will be borne on very late and very early varieties because these escaped the rains to a certain extent.

"I have given special attention this year to dichogamy in the various varieties of walnuts in most of the larger sections in California. The blooming dates of the catkins and pistils were somewhat closer together this year than has been the case for a long time. In many districts, even the Franquette pollinated itself quite successfully this year. In some districts there was considerable dichogamy. Many growers have found it necessary or advisable to artificially pollinate the Payne and Franquette varieties. In examining these orchards I find very heavy sets whereas in adjoining

NUT INVESTIGATIONS

Milo N. Wood (continued)

orchards not artificially pollinated the crops are much lighter. As a matter of fact, this has been a good year for natural pollination of the walnut. From this standpoint, we can expect a very good crop of nuts. There will, of course, be some loss from blight and probably from other diseases and pests as is usually the case. However, I estimate that the crop will be very heavy even after diseases and pests take their usual toll.

"For a number of years certain walnut orchards have suffered from die-back in the top. Often secondary infection has been found on these branches and in some cases it is believed that primary infections were at least partly due to crown rot or root rot. It seemed to me that in many cases this die-back had been due to a fluctuation of the water table in conjunction with drying out of the soil at certain periods of the year. In some districts it has been all too common to let the soil get dry during the winter months. I was particularly interested at this time in examining some of the orchards on deep, well drained soils to see what effect the heavy rainfall had on them this year. It was very clear that under such conditions the rainfall had been beneficial. In fact, in some instances the vigorous twig growth and heavy foliage was outstanding and when last year's dead twigs were pruned away no one would realize that there had been any dead wood in these trees."

Rulon D. Lewis, Albany, Ga. (Soil fertility investigations)

"The drought continues and the soil moisture is getting very low down at 30 inch depth," he writes June 7th. "There is a heavy drop in peach orchards taking place at present and there are some reports of pecan dropping from lack of moisture. The pecan nuts are very small for this time of the season, which is probably due to lack of moisture. From my observations in the past it is the nature of pecan trees to hold their fruit very well during drought periods but to drop them just as soon as active growth begins when moisture is supplied. If this observation is true then we can expect a very heavy drop when it begins to rain."

John R. Cole, Albany, Ga.

"I was interested in reading a report by Dr. Sitton from the Shreveport station in the June 1st News Letter," he writes. "The report was dated May 10th and Dr. Sitton commented on an instance where two trees apparently overproduced and were injured by the early freeze of last November. I might add that that is a more or less common occurrence here in south Georgia, especially with the Mobile and Moore varieties. And in a great many instances the trees are actually killed. Neither does this condition apply only to last winter, but to any winter following a heavy crop of nuts."

NUT INVESTIGATIONS

Ralph H. Sharpe, Cairo, Ga. (Tung investigations)

"Young budded trees in the fertilizer placement tests which received tung hulls in the holes at time of transplanting are continuing to show much injury," he writes June 7th. "The marginal necrosis of the leaves is not apparent on new growth but the new leaves are very pale in color, indicating excessive nitrogen deficiency. All of the treatments, including those with heavy manganese and magnesium applications, seem to be thriving. In fact, all budded trees in this area look good, despite the dry weather, except for one planting in which too much fertilizer was applied."

Clifton W. Van Horn, Yuma, Ariz.

"I was glad to have Dr. Finch here June 5th to go over the pecans with me. He agrees with me that we have the best prospects for a Burkett crop this year that we have had for several years. It looks more and more as if that reduced sunshine this winter was very favorable. We must figure out now what means to use to evaluate this factor more accurately. Any suggestions will be appreciated."

PERSONAL AFFIDAVITS

The Business Office has sent to all employees the Personal Affidavit described in Memorandum for Field Staff of June 19, 1941, and this paragraph is merely to call attention to the fact that this affidavit as to loyalty, etc. must be signed, witnessed and sent in promptly, as no employee will be paid after July 1, 1941, until his properly completed affidavit has been presented to the responsible officer for transmittal to the Business Office.

AMERICAN JOURNAL OF BOTANY

We have been informed by Dr. Charles Thom that the American Journal of Botany is in a position to accept manuscripts from members of the staff on subjects appropriate for publication in that journal.

Dr. Thom states that he has been informed by Dr. Ralph E. Cleland, Editor in Chief of the Journal, that any manuscripts submitted can be handled in "fairly quick time."

AIR MAIL

When using air mail, please make certain that the envelope bears sufficient postage! If it does not, the letter is held at the delivery post office until sufficient postage is supplied--meaning that the letter is apt to be delayed longer than if sent by regular mail.

PICNIC

The Eighth Annual Division picnic was held at and around the Log Cabin in the woods at the far side of the U. S. Horticultural Station at Beltsville, Md. Saturday June 7, 1941, beginning at 2 p.m. and continuing until dusk. Weather conditions have never been more favorable, and those who attended were loud in declaring that they had never had a better time.

The girls in charge of the registers did an excellent job of getting the signatures of every one promptly upon their arrival. Their friendly smiles and cheery words of greeting help every one to feel not merely at home, but thoroughly one of the family!

Dr. and Mrs. Auchter, Mrs. and Mrs. Gould, and the various members of the Beattie families were constantly moving about with friendly smiles and greetings for everyone. "J.H." and "W.R." as always were too busy looking after the endless details of the affair to have a single moment of relaxation for themselves--those boys never were and never will be any other way! Incidentally, "W.R.'s" coffee making again came in for high praise. Visitors from the Department at Washington were talking about it a week later!

The annual soft ball game was perhaps the best yet, and featured the men's games. Building No. 1 defeated a combination of players from Buildings 2 and 3 by 11 to 9, in the final inning. Dr. Magness, as is his annual habit, captained the winning team. They kept him from hitting a home run this time by the simple expedient of not giving him any good balls to hit, but they couldn't keep him out of the spotlight. With the bases jammed with Building 2-3 runners in the final inning, the Magness team ended matters with a rousing double play. Dr. Magness, who had shifted from pitching to playing first base, was on the finishing end of the play. If the ball had gotten away from him--but it didn't!

Speaking of homerun hitting, however, Ray Jones of the Business Office, hit one ball so far that if the trees had not stopped it a mile or so away it would undoubtedly have landed in the Lagasse front yard at Gainesville, Florida!

The girls found Irving Dix and his archery equipment, under the general supervision of Roy Magruder, as chairman, a great attraction. The bows (not beaux!), arrows and targets, plus Irving, made a contented looking picture down in the "valley" beyond the rhododendrons. As a matter of fact there were so many things going on at one and the same time that even the News Letter's splendid corps of reporters failed to get notes on a few of the contests--and their winners.

The children probably had an even better time than the grownups, excellent provisions having been made for their entertainment--games, wading, boating, swimming and the like. The wagon ride, chauffered by Theodore Reynolds of the farm staff, with "Lone Ranger" Dough Withers guarding the youngsters from accident, was a feature of the childrens' day and probably afforded some of them the only chance they have had of becoming friendly with real, live horses!

The highlight of the picnic was the annual contest in plant naming for the Auchter cup, presented each year to the contestant under 21, a member of the family of a Station employee, who is able to identify the greatest number of plants and trees in a designated series visited on a tour of the station. Incidentally, Mr. C. A. Reed, chairman of the committee handling this contest, happened to be on another part of the grounds when Dr. Auchter said some very nice things about the able manner in which the contests have been handled. His friends will have to tell him about it!

As in the past, Dr. J. B. S. Norton of the University of Maryland conducted the tour. The contest time was shortened a trifle, but 75 plants being visited instead of the 90 or more included in the tours of previous years. Sarah Culpepper, daughter of C. W. Culpepper of the Beltsville Horticultural Station broke two records in winning this year's contest: She named correctly 53 plants to top by 1 the 52 named by Miss Betty Reed, daughter of Mr. C. A. Reed, in a previous contest. And she became the first contestant to win the cup a second time.

In presenting the cup to her Dr. Auchter said: "Presenting this cup is about the most pleasant thing I have to do during the whole year in connection with the Bureau." After explaining something of the great advantage a person who knows plants has over one who doesn't, and pointing out that it was primarily to stimulate an interest in plants that the contest was inaugurated, Dr. Auchter handed Sarah the cup and stated that if she won it a third time she would acquire permanent possession, since the cup becomes the property of the first contestant winning it three times. He said he would be glad to provide another cup for future contests, if she did.

There were 17 persons in the party, about half contestants, that accompanied Dr. Norton, including several older persons who made notes for their own use as the names of the plants were announced and comments made concerning their uses or characteristics. Three girls who have taken part in previous contest, the Misses Darrow, Magruder and Lowman, made excellent records and will prove dangerous competitors in future contests. Carol Darrow, for example, though having to neglect her nature studies of late years, correctly named 39 of the plants!

Incidentally, Guy Yerkes must be feeling pretty good over the situation. His extra-curricular activities in building up the attractiveness of the Log Cabin grounds and surroundings met with enthusiastic praise!

ADMINISTRATIVE NOTES

Airplane Travel — As amended, the Standardized Government Travel Regulations no longer require the authorization or approval by the head of the Department, or his designee, of travel by airplane where the cost of such travel is in excess of the cost of other available transportation, taking into consideration salary and subsistence savings, and there is no existing emergency involving the loss of life or property. However, there has been no relaxation of the policy requiring the most careful administrative and fiscal consideration in the authorization and approval of travel by Government employees. The character and volume of the work of the Department necessitates very large expenditures for travel. There exists a tremendous administrative responsibility to exercise the utmost diligence in the expenditure of funds for this purpose, and at this time the importance of such action is further emphasized by the extraordinary demands in the field of National Defense.

An analysis of comparative travel costs for 31 typical trips from Washington and return discloses that only two trips of the 31 may be made by airplane at a lower cost than by rail, not taking into consideration the so-called salary savings. The study shows that for these 31 trips the average cost is approximately $127 for air travel and $102 for rail travel. Salary savings are indefinite as they are influenced by the day and hour departure. At a $3,600 salary rate and with the maximum allowance for such savings, only a total of 17 of the 31 trips could be performed by airplane at a lower cost than by rail. On the basis of this evidence, it is not possible to authorize the indiscriminate use of airplane travel.

In some instances travel by airplane is definitely more advantageous to the Government and in such cases authorizations will be granted despite the recognized additional cost, but it will not be the policy of the Department to increase expenditures without showing benefit to the Government. The requirements of Regulation 3438 will be continued in force except that authorization or approval of travel by airplane, where the cost of such travel is in excess of the cost of other available transportation, taking into consideration salary and subsistence savings, and there is no existing emergency involving the loss of life or property, will be provided by the Director of Finance in accordance with the delegation already approved.

If employees elect to use means of transportation other than the most economical usual method, it is not the responsibility of the Department to provide comparative cost data for the purpose of demonstrating salary and per diem savings. Within the limit of the resources available, employees traveling on official business will be furnished assistance in developing itineraries by the most economical usually traveled route.

H. P. GOULD RETIRES

Completing 40 years of service in the Bureau of Plant Industry, Mr. H. P. Gould retires September 30, 1941. He will actually leave us June 30, taking accrued annual leave, and will be succeeded by Dr. J. R. Magness.

Mr. Gould was born in Maine and is a graduate of Bridgton Academy and the University of Maine. He also received a Master's degree in Agriculture from Cornell University. He was assistant horticulturist at the Maine agricultural experiment station for several years and assistant at the Cornell University station for a time. Following a brief period of service with the State of New York as a nursery and orchard inspector and two years as assistant State entomologist at Maryland, Mr. Gould joined the Bureau of Plant Industry in July 1901 as assistant pomologist. He was promoted to various positions within the Division of Fruit and Vegetable Crops and Diseases, and in 1938 was placed in charge.

"Mr. Gould began work for the Bureau the day it started functioning as a Bureau," Dr. Auchter points out. "He has made many important contributions to our knowledge of fruit production in the United States. Other horticultural investigators in this country recognize him as an authority on fruit nomenclature and the adaptation of varieties for different regions of the country."

Mr. Gould is author of a large number of Government publications on fruit growing and related subjects, and many scientific and technical articles in the field of fruit production. He holds membership in various scientific societies, including the American Association for the Advancement of Science, the American Society for Horticultural Science, and the American Horticultural Society.

J. R. MAGNESS HEADS DIVISION

Dr. J. R. Magness, the new head of the Division, was born in Oregon and graduated from the Oregon State Agricultural College. His first work with the Department was in connection with cooperative investigations on the handling and transportation of fruits and vegetables. During the First World War he served with the Chemical Warfare Service. In 1923 he completed work for his Ph. D. degree in plant physiology at the University of Chicago. From 1927 to 1929 he was head of the horticultural department of Washington State College. He came back to us in September 1929 to head the section of deciduous fruit investigations. Dr. Magness is a recognized authority in the field of plant nutrition and plant chemistry, the author of numerous Department publications and scientific and technical papers published in outside journals. He holds membership in many scientific societies and is also a member of Phi Beta Kappa and Sigma Xi honorary fraternities. He will be succeeded as head of the deciduous fruit investigations section by Dr. Frank P. Cullinan.

GOOD-BYE, MR. CHIPS !

Probably most of you have read the book or seen the motion picture play, "Good-bye, Mr. Chips," picturing the beloved schoolmaster? Well, our "Mr. Chips" is leaving us, too, and we have been trying to think of some fitting remarks to make in farewell, even though we expect to be seeing him around the Station for a long, long time yet. While we were puzzling over the problem, Mr. Gould solved it--he is saying good-bye to us, and his letter, quoted below, does nothing to weaken our belief that he is one of the best letter writers Uncle Sam ever had!

"TO ALL MEMBERS OF THE STAFF:--The time toward which we are all looking, consciously or otherwise, has arrived for me. Of course all the staff at Beltsville now know of my plan to retire from active work at the end of June, and to be on leave until September 30, the date of my official tetirement; but to many in the field, this note may bring the first news of the transition. Dr. Magness has been named by the Chief of Bureau to succeed me as head of the Division. On June 30, I will have had 40 years, to the very day, of active service in the Department of Agriculture, having entered on July 1, 1901. These have been years of great change, great development and expansion in the Department; years of great change and advancement in agriculture. To me personally, they have also been great years--for two reasons: It has been my privilege to serve in a capacity that has given me a good measure of satisfaction in the opportunities offered; and my relations with the public, and with my associates and superiors have been remarkably pleasant throughout these four decades.

"For many years a considerable portion of my time was devoted to general service activities in the Division, but it is these past three years during which I have been in charge of the Division of Fruit and Vegetable Crops and Diseases to which I wish especially to refer at this time, for it is during this period, more than previously, that I have come to know and to appreciate the fullness of the cooperative spirit which dominates our entire Division group. To serve with this group, to sense their loyalty and devotion and personal good will is the culminating experience of all my years with this Department. I would make this a personal expression of appreciation and of best wishes for the future to each member of the staff individually. My superiors in the Bureau have been most considerate, my associates in the Division, not less so. The friendships formed will endure.

As Dr. Magness assumes the responsibilities of the Division Head, I bespeak for him--which is quite unnecessary--the same loyal support that you have given me. I am absolutely sure it will come spontaneously and without reserve. Personally, I look forward, among other things, to a desk somewhere here at the Station where I can settle down and do several pieces of work that I have felt for some time were waiting for me when this period of leisure and freedom from administrative cares arrived. I therefore do not feel any necessity of saying at this time 'Keep 'em flying,' because I am not leaving for any considerable period the associations that have been my life for so long a time. Most sincerely, H. P. GOULD,"

Vol. 13 No. 13 July 1, 1941

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R.

The official organ of the Division, through which the staff at widely separated locations is kept informed of the progress of technical and scientific investigations at Beltsville and at various field stations. The News Letter also carries administrative orders and memoranda with necessary explanations and directions. Since the material used is often of an informal and confidential nature it should not be published without the approval of the Division. Often reports of field workers and others represent their personal opinions, and so are not necessarily the official and final word on the matters they discuss.

John A. Ferrall, Editor

Vol. XIII U. S. Horticultural Station, Beltsville, Md. No.14
July 15, 1941.

Slandering the potato — During the First World War, the wife of an Irish soldier wrote him that she was much worried about getting her potatoes planted. There were no men available to dig up the garden for her, it seems, and she believed the job would be too much for her strength. The husband thought over the matter and figured out a solution. He wrote to his wife about things in general and then added the following postcript: "P.S. Don't dig up the garden; that's where the guns are hidden." A week later a reply came from her. She wrote that the censors had opened and read his letter, and a company of soldiers had been sent out to the place and had dug up the garden from one end to the other, but without finding any guns. She wanted to know what to do about it. "Go ahead and plant your potatoes!" wrote her husband, briefly.

Hints of this sort may prove decidedly useful in the near future, especially as the potato is working out from under the slander that has been heaped upon it. The Associated Press some time ago quoted a prominent Maine potato grower to the effect that the per capita consumption of potatoes had dropped because Americans no longer do enough physical work to develop the appetites they once boasted. He thought, too, that the improved methods of handling, transportation and storage, bringing a wide variety of fresh fruits and vegetables to us the year around, have helped cut the demand for potatoes.

Well and good, but he missed the main reason--the slander we have mentioned--the spread of the false notion that the potato contains some mysterious fattening agent. That isn't true, but it is as difficult to disprove as the old notion that a pound of lead must weigh more than a pound of feathers! It is cheering to note that the nutrition experts are coming to the aid of the potato.

"Fat in the body is energy stored for future use and comes from the day-to-day surplus received in food over that used up in activities," points out Dr. Ella Woods, home economist, Idaho Agricultural Experiment Station. "It is a result of the sum total of intake and not of any particular food. For fat production, that is, calories from potatoes are no different from calories from any other food. Individual potatoes vary considerably in composition, but water makes up at least three-fourths of their weight, so that it requires a little more than four ounces of potatoes to yield 100 calories of energy for the body. There is only about 20 percent starch, and almost no fat."

A fact that appears to be overlooked, is that ever since the discovery of America the potato--the so-called Irish potato--has been a very important factor in the prevention of scurvy epidemics. As late as 1920, in fact, one research investigator pointed out "The civilized world is dependent for its quota of antiscorbutic foodstuff upon the potato." The citrus fruits, of course, have stepped into the limelight of recent years as sources of vitamin C, and we know of many other sources of this vitamin and, in fact, it can now be made synthetically. But the potato is still the same valuable source and a very convenient one. Depending to some extent upon the soil in which they are grown, potatoes are also relatively good carriers of iron, copper, manganese, iodine and other valuable trace elements of human nutrition.

"Cooked potatoes, whether new or old, add considerable vitamin C (ascorbic acid) to the diet, regardless of whether they are baked, boiled, or steamed" say the experts of the Department's Bureau of Home Economics, who have made scientific tests to determine the effects both of cooking and of storage on the potato's ascorbic acid content. Green Mountain, Irish Cobbler, and our own Chippewa were the varieties used in the tests. The potatoes were cooked by methods commonly used by homemakers. In no instance did the potato lose more than 25 percent of its vitamin C value, and in most cases the loss was even less, despite the fact that vitamin C is destroyed easily by exposure to heat and air. Boiling pared potatoes, probably the most common way of cooking, was the method most destructive of vitamin C.

The experimental tests indicated that a person can get a substantial part of his daily vitamin C requirements from potatoes. Army officials are finding that the potato supplies from one-sixth to one-fourth of the soldier's daily quota of vitamin C and consider it a protective food because of this and its vitamin B_1 content.

The loss of vitamin C was found to be great during the first few weeks of storage--greater than the loss during cooking. Comparatively, then, very new potatoes have more vitamin C value than do storage potatoes, although both were found to contain amounts sufficient to make a valuable contribution to diets. For long-time storage, it was found that a temperature of 60°F. was less destructive of the vitamin than refrigeration temperature.

SWEETPOTATO GETS LIFTS ON ITS WAY TO INDUSTRY

The Department has been working for some years to develop the sweetpotato as an important source of raw material for industry. A press release of July 6th tells of important progress in the improvement of equipment and methods of producing, harvesting, marketing and storing sweetpotatoes.

"Cotton farmers who grow most of the sweetpotatoes for the cooperative starch plant established several years ago at Laurel, Miss., use standard cotton tillage implements for land preparation work for the new crop," says the release. "This practice has worked out well, but engineers have found that use of the general-purpose tractor with these implements provides a great advantage in deeper tillage and a high bed, especially important for this crop. New equipment has been developed for cultivation and for handling transplants.

"Most rapid progress has been with harvesting equipment and methods. "Sweetpotatoes for starch need not be handled as carefully as when grown for the food market. Members of the starch plant cooperative have learned to throw sweetpotatoes out with one trip down the row with a special 'middle buster' preceded by discs that trim off the vines. One experimental digger gathers about 20 percent more sweetpotatoes than are obtained by usual practices. Another is a combination digger and truck loader.

"Other short cuts include changes in piling the crop after digging, sleds and carts for collecting, and better ways of loading. Some sweetpotatoes are now shipped in box or cattle cars and are unloaded directly into a flume that carries them to the washer in which the factory work on the crop begins."

In this connection is an interesting item in the Dallas "News" in which the Texas Chemurgic Industries, Inc. of Dallas, Tex. announce that its first sweetpotato dehydration unit and yam flour mill will be erected at Bowie, Tex. at a cost of around $100,000.00. It is hoped that the plant will be in operation by next August. According to present plans the mill will have a capacity of 100 tons of sweetpotatoes a day. Already some 2,000,000 sweetpotato slips have been secured for distribution among farmers under contract to deliver yams to the plant next fall.

This Bowie mill is to manufacture dehydrated yam stock feed, sweetpotato flour (an excellent human food that can be made into pies, pastry and cakes and in which the Army has become interested as an emergency food for soldiers); yam protein and syrup. The newspaper item says that because the sweetpotato is high in vitamins, recent inquiries by the War Department have resulted in negotiations with the mill in connection with the possible supplying of some 40,000 pounds of yam flour weekly to the Quartermaster's Department.

DECIDUOUS FRUIT INVESTIGATIONS

E. S. Degman, Medford, Oreg.

Writing from the U. S. Pear Field Station on June 25th, he says: "It was necessary to irrigate New One South (cover-crop half) on June 18 and this half will require one more irrigation to bring the crop to maturity. The clean cultivated half of New One still has about 50 percent of its available water and will probably mature its crop with one irrigation around the middle of July. Fruit growth rate had not changed materially in the cover crop half of New One in spite of the fact that soil moisture was down to about 20 percent of the available capacity in the upper three feet and the leaves were getting loose. This is probably due to the fact that we have had cool weather with occasional showers and also the trees have a relatively light crop.

"The trees in the cover-crop halves of all plots look inferior at the present to the trees in the clean cultivated halves. None of these trees received fertilizer last fall though they had received it in previous years at the rate of 10 pounds of ammonium sulphate per tree. A few buffer trees were fertilized with 50 and 100 pounds of ammonium sulphate per tree. These trees have a better color and slightly more pears on the lower branches. There is a widespread opinion throughout the valley that pear trees do not do as well if the cover crop is allowed to mature. These observations are made on non-fertilized orchards. It may be that, as in the case with 'sod' orchards, nitrogen is necessary to produce a cover crop without injury to the tree. We have gone into the cover crop angle rather intensively because it seems to have a beneficial effect on the physical condition of the soil and probably will prove beneficial to water penetration. Cover crops seem to get better each year that they are allowed to mature; they apparently reflect the beneficial effect on the soil quicker than the trees.

"The gypsum plots are being irrigated for the first time now. Considerable quantities of the gypsum are still on the surface of the soil and any beneficial effects of the treatment may not show up until the gypsum has been carried into the soil by water movement.

"The trees receiving the alfalfa hay mulch last fall continue to look exceptionally good. The four trees treated have a uniformly good crop even on the lower branches. Additional trees have been treated with hay and also with hay extract this summer but as yet show no effect of the treatment.

"Present crop estimates are as follows: Anjou, 673,000 boxes; Bosc, 373,000; Bartlett, 716,000; Comice, 98,000; Nelis, 63,000; and Seckels, 10,000 boxes."

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"The season thus far has been anything but favorable to the peach grower in Georgia," he writes June 30th. "In the early part the weather was so dry as to adversely affect the size of the crop; now it is so wet there is a great deal of concern that the present Hiley season will be a repetition of last year's, when 18 days of rain injured the carrying quality of the fruit. Rain has fallen at the laboratory every day for the past eight days, and to make matters worse, brown rot is much more prevalent this year than last. The brown rot condition may be attributed to the large amount of blossom blight which occurred in orchards this spring. We are getting good comparisons on the resistance of our seedling peaches to the disease. Incidentally the Erly-Red-Fre variety in our limited tests has proven to be quite susceptible to brown rot, worse than any of our selected seedlings.

"The Early Hiley sport limb which I discovered blossoming early several years ago, and which blossomed about five days early this spring, bore about a dozen fruits this year, all of them ripening three or four days ahead of the other peaches on the tree. We may have something there."

TEST HARDINESS OF APPLES

"A new rapid method for determining winter hardiness for apple rootstocks has been developed by E. A. Siegler and J. J. Bowman of the U. S. Horticultural Station, Beltsville, Md.," says a press release. "The need for hardy stocks has long been recognized but the 'Armistice Day' freeze of last November, when thousands of nursery and orchard trees west of the Mississippi River were destroyed by sudden and extreme drops in temperature, focused attention on hardiness.

"The tests consist in freezing at 20°F., in storage chambers, large numbers of apple seedlings and selecting from the frozen plants the comparatively small number of seedlings that show little or no injury. These uninjured seedlings are then planted for future observation of their growth. This method was proposed by workers at the New Hampshire Experiment Station in 1924, but apparently has not been put in practice until now. The standard method of testing hardiness has been accurate, but required expensive equipment and skilled operators. The new method is quicker, cheaper, and permits tests of many more seedlings.

"These tests could be easily adapted to root stocks for other plants but they were designed primarily to test apple seedlings that--because of war conditions--must necessarily be produced from United States seed. Siegler and Bowman have already found that, in general, seedlings from our common native apples are hardier than seedlings produced from the commonly used French crab seed. The tests show that seedlings that 'wake up' or start growth earliest in the spring are the ones most injured by freezing in mid-winter."

LOOK GOOD--TASTE GOOD, TOO.

"A new type of naturally flavored preserved cherry, decorative as the true maraschino, and definitely good to eat as well as to look at, has come from experiments by the U. S. Department of Agriculture and the State Agricultural Experiment Station at Geneva, New York," says a press release of July 13th. "It is described as a really edible preserved cherry suitable for garnishing drinks, ice cream, salads, and other foods, and tasty enough to encourage eating as well as looking.

"Real 'maraschino cherries' are now rare on the market. Most of the type are both artificially colored and artificially flavored and have to be labeled accordingly. The new product is naturally flavored with cherry sirup.

"'Maraschino' derives from the Latin word for 'bitter,' applied to the cherries from which was distilled a liquor used in finishing other cherries brined to make them firm. Many dislike either the original bitter flavor or the chemical imitation. The cherry research at the Geneva station sought a practical way to use cherry juice to improve the flavor of brined cherries. Montmorency and English Morello varieties of cherries yield pleasing flavors for finishing the Royal Ann cherries usually used for brining. Experiments showed that hot press and cold press juices of each variety differ in flavor, and that by blending these four types of juice in varying sirups, packers can get natural flavors to please most cherry nibblers.

"The 'cherry red' of the flavorsome new cherries will come from a dye as in the real and imitation maraschinos. This is applied after the cherries have been brined and bleached to make them uniform as a basis for the dye. (If there were colorless cherries the bleaching could be omitted.)"

"OUT OF THE WAY" SPOTS GROW BERRIES FOR BIRDS

Most of the plants recommended for soil conservation used must be able to 'take it,' but not all. Some plants, such as many of the berried shrubs and vines, which serve the double purpose of erosion control and food for wildlife as well as humans, warrant planting on the best soils on the farm. Many farmers are glad to encourage birds and other forms of wildlife by using the more fertile 'out of the way' places on the farm for planting hedge rows of berried shrubs. By reason of long accumulating topsoil, turning fence rows afford ideal conditions for such plantings with little or no sacrifice of cultivated farm land. This applies to areas other than where old fences remain in place or to locations where fences have been removed and re-located to facilitate contour tillage. In either event, such places usually have most of the original good soil left, providing just the kind of fertility and moisture conditions required by berried plants that are especially useful yet do not thrive in poor soils.

TESTING 40,000 TUNG TREES

According to a newspaper story, a minister had avertised for a man to help around the house, and early the next morning he responded to the door bell's ring to meet a young and quite well dressed man. After ascertaining his name, the minister asked him if he could manage fires and prepare breakfast at 7 a.m. for several persons. The man looked a bit doubtful but finally agreed that he could probably manage it. "Well," went on the minister, "can you polish silver, wash dishes, and keep the house neat and tidy?" The young man stood up. "Say, Parson," he said, "I came here to see about getting married; but if it's going to be as much work as all that, count me out now."

It's all right, we were just wondering whether the boys actually knew what they were going to be up against when they started this tung growing campaign, is all.

"More than 40,000 tung trees--the beginning of what Department of Agriculture scientists hope will be a successful tung oil industry in the United States--were planted this spring in test orchards throughout the Gulf Coast regions," says a statement given to the paper July 6th. "Sharp reduction in imports of tung oil because of the war in China and the generally unsettled conditions in the Far East have stimulated interest in growing tung treesin this country. Tung oil is an indispensable ingredient of quick-drying paints and varnishes.

"For three years Bureau of Plant Industry specialists have been scouting tung orchards in the South for superior trees. Combing these orchards, they selected some 500 trees which were hardy, high yielding, and early maturing. Nuts from these trees yield a high percentage of good quality oil. About 80 of the best trees from this selected lot of 500 were then chosen for propagation. Thousands of young trees were produced from them. Many of these were killed in the freeze of last November, but the rest were planted in 13 test orchards--one in Texas, two in Louisiana, two in Mississippi, one in Alabama, four in Georgia, and three in Florida.

"Besides breeding tung trees better adapted to the climate of this country which will yield larger quantities of oil, Department of Agriculture scientists are studying various problems of growing the trees. Chemists in the Bureau of Agricultural Chemistry and Engineering are working on tung-oil and have found a way to recover practically all the oil.

"These research men warn prospective tung growers, however, that the industry is still an expensive and speculative enterprise if attempted on a large scale. Tung trees do not bear for at least five years. They do not do well on infertile or poorly drained soil. Chances of loss because of freezing or some other cause are high. But farmers along the Gulf Coast may well plant a few tung trees as a sideline, these specialists say."

NUT INVESTIGATIONS

Felix S. Lagassé, Gainesville, Fla. (Tung investigations)

"Counts made by Dr. Reuther and Mr. Dixkey on the set of fruits on the A. montana trees at Orlando indicate quite clearly that the percentage of fruit set on open pollinated terminals is quite low, in one case only 7 fruits set on 37 open pollinated terminals. In contrast, 75 fruits were set on 37 terminals that had been bagged and hand pollinated with pollen from one source. The trees, as a whole, however, have set a fairly large crop of fruit compared to most previous years, but much of it appears to have only one or two of its three carpels developed, while hand pollinated fruits usually have all carpels filled. These results give further evidence that these isolated trees fail to set much fruit because of poor pollen availability.

"The studies concerning the effect of manganese deficiency on the photosynthetic activity of tung leaves are still in progress. The data obtained so far continue to indicate a great variability among leaves, necessitating a much larger number of replications than originally anticipated. Since the rains have started, with accompanying periods of cloudy weather, the photosynthetic rates have shown a general increase. Evidently the spring drought in this area was reflected in the efficiency of the foliage. There is also an indication that tung leaves function very efficiently under cloudy to hazy-bright light conditions."

Paul W. Miller, Corvallis, Oreg.

"The forepart of the week ending June 28 was spent in the field taking results of additional studies on spraying for the control of filbert blight. The latter part was spent mostly taking results of spraying tests for the control of walnut bacteriosis. In tests carried on in the Lebanon district, good control of walnut blight was obtained by timely spraying with bordeaux mixture 6-2-100 plus a mineral oil, 1 pint to 100, which reduced the incidence of infection from 51.8 to 6.7 percent. Yellow cuprous oxide, 1 1/2-100 gave equally as good control, reducing the incidene of infection to 5.4 percent. Under the extremely wet condition prevailing this season in this locality, bordeaux mixture has caused an interveinal spot necrosis of the leaves despite the use of a low-lime bordeaux mixture and oil. However, yellow cuprous oxide did not cause any detectible injury.

"A leaf spot disease due to Ascochyta juglandis Bolt. was found to be very prevalent on unsprayed walnut trees in this region. The disease is not so prevalent in the sprayed as in the check plots indicating that timely applications of bordeaux mixture or yellow cuprous oxide will aid in the control of this malady...Filbert shrivel, a non-parasitic disorder of the nuts causing them to turn brown and die, is showing up in greater than usual amounts in many filbert orchards in the Willamette Valley."

NUT INVESTIGATIONS

George F. Potter, Bogalusa, La. (tung investigations)

"Mr. Sharpe of the Cairo, Ga. tung laboratory has reported a 'scorch' on the foliage of newly transplanted budded trees, caused by incorporating 10 pounds of tung hulls in the hole at planting time. For some unknown reason similar plots at the tung farm in Pearl River County, failed to show this injury, but identically the same condition has been discovered in some mature tung trees growing in a rather unfavorable soil and deeply mulched this spring with tung hulls. The heavy mulch of disintegrating tung hulls is a matted mass of tung roots. The leaves show a greater variety of colors than those observed by the writer in the plots of the Cairo laboratory. Photographs have been made, both in color and in black and white, and samples of leaves were taken for investigation at the Gainesville laboratory."

MAN-MADE WEATHER AIDS GRASS STUDY

"Scientists of the U. S. Regional Pasture Laboratory, State College, Pa., have just set up a new 'climate maker' to test pasture plants in controlled environments," says a Press Release of July 13th. "Made-to-order weather will aid U. S. Department of Agriculture research in breeding improved grasses and legumes and in improving pasture management practices.

"The 'climate maker' is a heavily insulated cabinet with four large chambers where sample plants can be grown under controlled light, temperature, and moisture. The chambers have outer doors of refrigerator type, and inner doors fitted with observation windows. Above each chamber a bank of fluorescent lamps, insulated by plate glass, provides maximum light with minimum heat.

"Air conditions and other environmental factors can be made to vary as they do on ordinary days during a growing season. Special apparatus controls the temperature, humidity, and flow of air in each chamber. Soil temperature, moisture content, and nutritional value are under control. Varying lengths of day and different light intensities simulating cloudy or clear weather can be provided. Recording devices trace an accurate, continuous account of the manufactured weather and soil conditions inside the chambers.

"Bureau of Plant Industry research men of the laboratory--who cooperate with experiment station workers in the 12 Northeastern States from Maine to West Virginia on fundamental pasture problems of the region--believe that better management may be the key to the greatest immediate improvement in the pastures of the Northeast. Since environment greatly influences management practices, these scientists expect the 'climate maker' to give them information which will later prove helpful to farmers."

ADMINISTRATIVE NOTES

Purchasing "I wish to call your attention to various memoranda and efforts we have made to urge divisions to expedite their purchases during the present fiscal year, and in so far as possible, avoid heavy expenditures in the last quarter of the fiscal year," says Memo. 1210, BPI, dated June 30, 1941, and signed by Mr. H. E. Allanson, Business Manager of the Bureau. "Please note particularly the following:

"'Memorandum to Heads of Divisions, dated February 12, 1941, circularizing Budget and Finance Circular No. 331, entitled "Timing of Procurement Programs to Avoid Delay and Congestions." In this memorandum, you were asked to give this matter your personal attention, and to see that the Budget and Finance circular came to the attention of all members of your staff concerned with procurement.

"Memorandum to Heads of Divisions by Mr. George B. Holmes in charge of our property work, dated February 14, 1941. In this memorandum you were again asked to do everything possible to expedite purchases.

"In March, Mr. Holmes, at my request, called all Heads of Divisions on the telephone and read to them an excerpt from a report by the Appropriations Committee, as follows:

"'Frequently agencies of the Department--and not only the Department of Agriculture but other departments and agencies of the Government--find themselves in the last few weeks of the fiscal year with balances in appropriations on account of salary lapses or for other reasons and it has come to the attention of the committee that these balances are often expended for supplies, materials, alterations and repairs, and other purposes without sufficient regard to the necessity for such expenditures. The bare fact that there is a balance left in an appropriation is no justification for this character of expenditure and the same tests of need should be applied to purchases in the last few weeks of the year as are applied during the first few weeks of the year.

"'The committee considers this practice of "June buying," if it is only for the purpose of expending balances which would otherwise be returned to the Treasury, reprehensible and suggests that it is a matter worthy of attention by the Comptroller General, who should, whenever he finds it to exist, report it to Congress with recommendations as to remedy.'

"Again it was urged that everything practicable be done to expedite purchases and avoid as far as possible heavy purchases late in the fiscal year. Copies of this excerpt were also sent to all Heads of Divisions.

"In early April at my request, Mr. Holmes again called all Heads of Divisions urging that purchases be expedited to avoid heavy purchases late in the fiscal year.

ADMINISTRATIVE NOTES

"On May 31, 1941, Budget and Finance Circular 414, entitled 'June Buying,' was also circularized to all Heads of Divisions.

"Our purchases during this last quarter have again been exceedingly heavy. It is appreciated that June 30 was not selected by this Bureau as the end of the fiscal year, as it comes during the peak of our activities. Because of this, we will always have some expenditures during the months of April, May, and June, which cannot be avoided. However, it is absolutely necessary that every effort be made to hold late purchases at a minimum. It is entirely possible that we will have to defend many of these late purchases, and failing in this that they may be charged to funds available for the coming fiscal year."

STANDARD BID FORM REVISED

U. S. Standard Form 33, "Invitation, Bid, and Acceptance," approved March 30, 1936, has been revised as of January 17, 1939.

The revised form contains certain conditions and instructions to the bidders not incorporated in older forms. All field offices therefore should destroy the old bid forms they may have on hand and order through the Business Office a supply of the new revised Form 33.

L. M. HUTCHINS NAMED HEAD OF FOREST PATHOLOGY WORK

It will be a source of considerable pleasure to the many friends of Dr. Lee M. Hutchins, to learn that he has been appointed head of the Division of Forest Pathology of the Bureau of Plant Industry, succeeding the late Dr. Haven Metcalf. Dr. Hutchins, of course, has for some years been a valued member of our staff, and lately has been in charge of our research on virus diseases of tree fruits, principally in the South and West.

"Doctor Hutchins is a recognized authority on virus diseases of trees, not only nationally but internationally," said Dr. Auchter in announcing the appointment. "He will bring to the Division of Forest Pathology, in a field where virus diseases are a major problem, a recognized leadership as well as proven administrative ability."

Outstanding among Dr. Hutchins' research achievements with us has been his work on the phony disease of peaches. He determined the cause of this disease, developed control methods, and organized an eradication campaign in the Southeast. In this work he perfected a new technique for studying virus diseases that helped make possible his discovery later of the cause of peach mosaic disease, and aided later investigations of other new tree diseases.

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R.

The official organ of the Division, through which the staff at widely separated locations is kept informed of the progress of technical and scientific investigations at Beltsville and at various field stations. The News Letter also carries administrative orders and memoranda with necessary explanations and directions. Since the material used is often of an informal and confidential nature it should not be published without the approval of the Division. Often reports of field workers and others represent their personal opinions, and so are not necessarily the official and final word on the matters they discuss.

John A. Ferrall, Editor

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August 1, 1941

Copper Sprays

If growers of most of our principal fruits and vegetables are to produce crops that are free from disease, they must except in certain favored sections, apply copper sprays. Without the application of such sprays, marketable crops could not be produced in many cases. This situation is leading agricultural research workers to give a good bit of thought to the possible shortage of copper. Defense needs, may make copper something more than the common, always obtainable, substance it has been in the past.

Copper sprays, particularly bordeaux mixture, have an extensive use in American horticulture. They are effective fungicides, spread and stick very well, and are toxic over a relatively long period. For many years bordeaux mixture has been the standard spray for the control of plant diseases. Except on plants to which it causes serious injury, it is still the standard. Up to now it has been cheap, too; and it is easily handled and practically non-injurious to operators. As a killer of fungi, bordeaux mixture ranks so high that except for use on plants that it injures severely, little work has been done on the development of fungicides to take its place. Practically the only fungicidal sprays that have even partially supplanted copper within the past thirty years are lime-sulphur solutions and elemental sulphur.

Other copper sprays beside bordeaux are also used to a limited extent, of course. The so-called insoluble coppers are used either on varieties sensitive to bordeaux mixture or at times when a mild copper fungicide is sufficiently effective to give adequate control.

In recent years considerable progress has been made in the development of organic fungicides, and it seems probable that within a few years organic fungicides will be available that will be as effective as the inorganic materials now in use--and less injurious to sprayed plants. Too, there are reasons for believing that they may even improve the appearance of the foliage and fruits. At the present time, however, there are no substitutes that can be recommended to take the place of copper in the control of some of the most serious diseases of grapes, pears, apples, small fruits, pecans and other nut crops, citrus and subtropical fruits, potatoes, tomatoes and other vegetables.

Dr. John W. Roberts and his associates, Dr. M. C. Goldsworthy and Mr. E. L. Green, have tested literally hundreds of organic materials, most of them supplied by chemical manufacturers or by the Insecticide Division of the Bureau of Entomology and Plant Quarantine. Perhaps the threatened shortage of copper may stimulate other research specialists to enlarge the quest for successful organic fungicides. Dr. Roberts hopes so!

Of the organic materials the Division's Workers have tested out, phenothiazine is one of the most promising. It has given fairly good control of apple scab and has given some indications that it might control bitter-rot. It has been reported as delaying maturity of apple fruits, but in our experiments (in the East and middle West) the fruits have seemed normal, free from injury, and with a beautiful finish. The leaves have not been injured and have been noticeably a darker green than those of unsprayed trees. Phenothiazine has also controlled mild cases of cherry leaf-spot. Its principal weakness appears to be lack of adherence, though a considerable improvement in this respect has been obtained by finer grinding. If this product adhered better, was effective over a longer time, and could be produced cheaply in large quantities, it might be developed into a practical fungicide.

Dinitro compounds, the thiuram disulphides, the diphenylamine derivatives, and the thiocarbamates show promise and may eventually become useful. Ferrous dimethyl dithiocarbamate has one advantage over the other organic chemicals so far tested by Dr. Roberts and his associates in that it spreads and sticks well. At this time, before the end of the first season's test, it appears to have controlled apple scab and to have caused no injury to fruit or foliage, but examination of the picked fruit will be necessary before we are certain that scab has been controlled. No doubt other organic materials will be found useful in this field also.

Some copper could be saved by using sulphur or lime-sulphur in early summer on apples before changing to copper. No copper is used on peaches during the growing season, and lime-sulphur solution could be used in place of copper as a dormant application for the control of leaf-curl. Lime-sulphur solution could be substituted for copper in the spraying of cherries and plums. It could also be used for the control of pear leaf-spot and scab, but is apt to cause severe injury.

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"There has been only a little intermittent blueberry picking since July 2d," he writes July 8th. "Showers have been frequent and it has been necessary to wait for the bushes and fruit to dry after each wetting. Yesterday morning, for example, Mr. Delap and I were soaked three times in an hour by sudden showers, although we were not more than 100 yards from the truck. There were 22 1-pint samples to be picked yesterday for our incubator tests of varieties, and it has only been possible during these two days to pick 16 of them when dry. Of course, parts of fields which were not picked just before the continuous rains began now contain over-ripe fruit, and some varieties, specially Cabot and Rancocas, are cracking very badly. By July 1st all of the Cabots from some fields were being packed in the 'Star' or unbranded grade, and now it will be impossible to pick them again for market until the cracked berries have shrivelled and dropped off, which may happen if we have a week of sunny weather immediately. Needless to say, the growers are downhearted since every day of rain is costing them many thousands of dollars.

"Late-drawn cranberry bogs are still in bloom, but there will probably be a very light set of late berries because of the unfavorable conditions for pollination. We have the materials ready for testing the effect of several spreaders and chemicals when sprayed on bloom, but have not yet been able to put the sprays on the bog...A blueberry tour was arranged for today for a number of agricultural editors and broadcasters, and Drs. Darrow and Clark have a tour scheduled for the 10th and 11th. On the night of the 10th the Ocean County Cranberry Club has arranged a meeting at Toms River, with a number of prominent speakers."

Dr. J. H. Weinberger, Fort Valley, Ga.

"The Elberta harvest will be in full swing in this section this week," he writes July 14th, "with heavy shipments in prospect if the market permits. Prices were so low on Hileys last week that a number of orchards were never picked, and in others only a first picking of the larger peaches was made. Canneries in central and south Georgia have been operating full time on Hileys lately, taking thousands of bushels off the market. One price reported on these Hileys was 35 cents a bushel at the orchard. A man in a position to know told me that a million bushels of peaches will be canned in Georgia this year...The Jordan clingstone peach, being tried out as a canning peach, was observed last week. It is an attractive yellow non-melting peach, somewhat similar to Hiley in shape, and of better quality than most of the clingstones of this type. As a canned product it is superior to Fair Beauty in appearance and quality, and to the California clings in quality. One fault is its tendency to ripen first at the apex and last near the stem. The failure of the trees to set a full crop of fruit this year, when adjoining Elberta trees are loaded, is holding back its development."

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"A number of the peach growers in the Springdale area have organized to market their peach crop cooperatively," he writes July 12th. "They hope to promote an orderly movement of the large Elberta crop in this district and thus prevent a drastic drop in price during the peak of the movement.

"During the collection of drops from our apple plot on the 8th it was noted that blotch infections have become very numerous on the fruit in the check plot. The presence of blotch on the check plot will enable us to get some information on the efficiency of the various fungicides tested against this fungus.

He had written July 5th: "Two interesting specimens have come to hand this week. The first is a case of powdery mildew on leaves of sour cherry. The hot dry weather has favored the development of the fungus. The second specimen was brought to my attention by Dr. J. E. Vaile of the University of Arkansas horticultural department, and consisted of apples, San Jacinto variety, showing cedar rust lesions followed by infections by the black rot fungus. An appreciable portion of the crop is affected."

G. A. Meckstroth, Willard, N. C.

Writing from the Coastal Plain Station on July 8th he says: "At Crabbe's the last blueberry picking was made last Saturday. The crop picked this year about equalled that of last year, but the long dry spell during the early part of the season caused considerable reduction in the size of the berries. Frequent rains toward the end of the season caused cracking from being over-ripe. The plants are now starting the summer shoot growth. I examined about 250 Scammel blueberry plants and found three doubtful cases of the stunt disease. It shows on only one or two shoots, but is so slight that I cannot be sure at this time. I want to observe these during the summer to see what develops. I made some counts in the old Scammel rows, the age of the plants being eight to ten years and in two rows found 52 normal plants and 93 with stunt disease.

"Last week I visited a blueberry planting set out with plants brought in from the woods. They were grubbed out and set out last January. Some plants were marked last year during the bearing season, but it appeared to be a solid block of 'Big Blues' so the grower discontinued tagging them and dug them up as they came to them. Ten acres have been set out. This is the first experiment of this type that I know of around here."

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

The staff of the Sugar Plant Field Station joined our own on Thursday, June 26, in a very enjoyable picnic on "Buster" Banes' lawn. The food was excellent and plentiful, and the entertainment enjoyed by all. The occasion served as a welcome party to the Steinbauer family.

J. M. Lutz (Handling, Transportation and Storage Investigations)

"Work on tomato handling has been continued with especial reference to 'shoulder' bruises. Confirming the results of last year it was found that the 'shoulder' of the tomato is much more susceptible to bruising than other positions. Apparently most of the shoulder bruising occurs when the tomatoes are hauled from the field to the packing shed as it was almost impossible to secure this type of injury in the packed lug even when very tightly packed. However, shoulder bruises frequently appear so slight when packed that they are not noticed and get into the package. When the tomatoes ripen these bruises may darken and detract from the appearance of the fruit and may offer a source of infection for decay organisms. Work on potato scald was also conducted."

N. H. Loomis (Small Fruit Investigations)

"A check of the bunch grape breeding work shows that 43 crosses were successfully made and a little less than 2,000 berries were set. This will probably give as many seedlings as we can handle satisfactorily. The first peaches, June Elberta, were harvested June 18th.

Atherton C. Gossard (Nut Fruit Investigations)

"The Moore pecan trees in the station orchard were sprayed with zinc sulphate at the rate of 4 pounds per 100 gallons of water, and nicotine sulphate 1 to 2,000 for the control of pecan rosette and aphids," he reports for the week ending June 28th. "Under the conditions existing here, the Moore variety seems particularly susceptible to rosette. Noticeable symptoms are showing up on this variety in spite of an application of 5 pounds per tree of 25 percent zinc sulphate in 1940 and regular spraying with zinc sulphate in both 1940 and 1941. It is possible that an application of ground limestone at the rate of 1 ton per acre in the summer of 1939 to help counteract the high acidity of the soil has tied up the zinc, making it unavailable to the trees, and so induced the rosetted condition.

ADMINISTRATIVE NOTE

Prestone Anti-freeze — We have been informally notified by the Division of Purchase, Sale & Traffic that the supply of Prestone anti-freeze will be curtailed this year. Therefore, orders for any definite requirements should be placed as soon as possible.

NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

Writing from the U. S. Pecan Field Station and Laboratory on July 5th, he says: "Visits to our experimental plots and other orchards near Albany show that nut drop due to shuckworm infestation is beginning to appear. As yet the percentage of infested nuts is generally low but control measures will need be instituted in the near future. Black aphids are beginning to build up again and it is feared that a special aphid spraying may be necessary if the build-up increases to any extent."

C. L. Smith, Brownwood, Tex.

"A check of data for 1941 on pollen adherence as a criterion for stigma receptivity in the pecan shows that this method is accurate to within 24 hours for about 90 percent of the stigmas. The other 10 percent fall within a 24-to-48 hour period. Therefore, this method can be used to determine the dichogamy of protandrous varieties. Although the 1941 season was much later than the average, there was somewhat less overlapping of the periods of stigma receptivity and pollen shedding than in some earlier seasons on the Western Schley, Squirrels Delight and Success varieties. No other protandrous varieties were checked. About 20 percent of the stigmas in each of these varieties were subject to self-pollination as they were receptive before the last pollen was shed by the same variety. The length of the stigma receptive period of the Western Schley was about the same as the average."

C. E. Schuster, Corvallis, Oreg.

"The last month has been very cool with occasional rains," he writes July 5th. "Growing conditions have been so good that the usual foliage abnormalities have not shown up. In our fertilizer work the fertilizer effects were very evident the first part of May. Now they are not nearly so evident--the normal growth of the trees is so good. In the filberts the crops range from rather light to extremely heavy according to the location. We have recently seen probably the heaviest crop we have seen on trees. Also we have seen poor crops.

"In the walnuts the late blight is taking its toll, especially on the fruit set on the delayed foliation material. This late blooming material has been exceptionally heavy hit in some localities."

Milo M. Wood, Sacramento, Calif.

The walnut crop will be heavy this year, as always seems to be the case in years favorable to pollination. The almond crop will be light. In general I think it is one of the scantiest crops I have observed, largely due to the fact that there was not enough favorable pollination weather.

NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"The forepart of the week was spent in the Roseburg district checking on the results of spraying tests carried on in that region," he writes July 5th. "Excellent control of walnut blight was obtained in tests carried on in this area by timely spraying. Thus in studies in an orchard near Roseburg three applications of bordeaux mixture 6-2-100 plus a light mineral oil, 1 pint to 100, applied in the early prebloom, late prebloom, and early postbloom stages reduced the incidence of infection from 42.3 to 1.7 percent. Yellow cuprous oxide 1-1/2 - 100 gave equally good control, reducing the incidence of infected nuts to 0.8 percent.

"The latter part of the week was spent in the Aumsville and Monmouth districts checking on the results of spraying tests. Outstanding control of walnut blight was obtained in both regions. In one orchard near Aumsville, Oreg. four applications of bordeaux mixture 6-2-100 plus mineral oil, 1 pint to 100, applied in early prebloom, middle prebloom, late prebloom, and early postbloom stages reduced the incidence of infection from 53.7 to 1.8 percent. Copper oxalate (20 percent) 3-100 and yellow cuprous oxide 2-100, also gave excellent control, reducing the incidence of infection to 2.9 and 2 percent, respectively.

Very good results were also obtained from a 10 percent yellow cuprous oxide dust and a 25 percent copper oxalate dust that reduced the incidence of infection to 4.3 and 5.6 percent, respectively. An application of 'Elgetol' (a so-called 'eradicant' fungicide) applied at the rate of one quart to 50 just before growth started in the spring did not reduce the incidence of blight infection at all, there being 77.5 percent blight in the plot sprayed with this material as compared with 53.7 percent in the checks.

"Results of studies on the relation of fertilization to control, in confirmation of the results of studies carried on in 1940, would seem to indicate that fertilization has but little, if any, effect on the incidence of blight infection. Thus in one orchard the incidence of infection in the plot treated with a complete fertilizer was 51.6 percent as compared with 57.7 percent in the untreated plot.

"Excellent control of walnut bacteriosis was also obtained in tests carried on in the Monmouth region. Two applications of bordeaux mixture 6-2-100 plus a heavy mineral oil, 1 pint to 100, reduced the incidence of infection from49.3 to 2.2 percent. Three applications of bordeaux mixture applied in the early prebloom, middle prebloom and late prebloom stages gave even better control, reducing the incidence of diseased nuts to 0.7 percent."

NUT INVESTIGATIONS

Felix S. Lagassé, Gainesville, Fla. (Tung investigations)

"The staffs of the Florida Agricultural Experiment Station and our own united for a picnic at Surfside Casino just outside of St. Augustine," he writes July 12th. "A great time was enjoyed by all yet there were those who underestimated the sun's capacity and red faces were commonplace about the labs on Saturday the 5th. Two factors seriously interfered with our usual baseball game, namely, the presence of high tide during the early hours of the afternoon, and the high birthrate attained during recent months among the families of the tung laboratory staff which prevented four of them from being with us. Nevertheless a good game of scrub was developed that continued until all had had their fill. A watermelon party on the way home completed the day with a number asking that the event be repeated more than once a year.

"Studies by Dr. Drosdoff and Mr. Dyal with soil moisture samples collected from the soil type plots at Bassatts reveal that the moisture content of both the Norfolk fine sand and the 'Inverness' fine sand has built up to the maximum field capacity as a result of the summer rains. The sand layer just above the clay in the 'Inverness' soil has again become saturated with moisture--about 18 to 20 percent... Dr. Reuther reports that the first phase of the studies on the relation of manganese deficiency to photosynthetic activity was completed last week. The results are not conclusive because of the great variability found among individual leaves, in spite of the fact that the manganese treated foliage was notably greener than the controls. As a result of these experiments, the assimilation cups used have been changed slightly in a manner, it is hoped, that will eliminate the development of necrotic areas (under high light conditions) in the portion of the leaf enclosed by the Heinicke cup. It appears that tung leaves are more fragile than apple leaves on which this type of cup was first used."

Ralph H. Sharpe, Cairo, Ga. (Tung investigations)

"In our budding work this spring we find that we budded or grafted over 3300 plants. The present indications are that about 60 percent are forced satisfactorily. Surprisingly enough, not very much variation between selections occurred in spite of budwood coming from various sources, as no selection gave over 80 percent 'take'. In observations of vigor of different selections there is quite a difference noticeable, two of the best being G-44 and G-52...Mr. Brown has summarized his data on pollination studies made in the spring. The results of pollen viability studies agree with those previously reported by other stations; namely, that the pollen loses its viability in flowers that have been open from two to three days. The most notable thing about the method of pollination is that approximately 50 percent set was obtained where bees and other large insects were excluded from the flower. It is believed that this set is due principally to wind or mechanical pollination."

NUT INVESTIGATIONS

George F. Potter, Bogalusa, La. (Tung investigations)

"With adequate moisture in the soil, the seedlings in the nursery that were injured last November, and were cut back last spring, are now rapidly budding out," he reports July 5th. "Mr. Merrill and his crew and several of the laborers at the farm have been kept busy disbudding the stumps in order to get the trees with a single stem. The budded trees in the nursery which were cut back last spring have made a splendid growth. As a result we have large quantities of budwood. It is estimated that we have not less than 30,000 buds each of the clones L-14 and A-12, two of the best on our list. We also have large numbers of many other clones.

"Last May Mr. Merrill noticed an article in the American Nurseryman on rooting of cuttings under a constant spray of water. On June 6 he put 15 stem cuttings of tung in the propagating frame, arranged in such a way that water dripping from a valve spattered on the foliage. At the present writing six of these cuttings have rooted. This is exceptionally good for tung cuttings taken at this stage of growth. Although it seems quite unlikely that this method could ever be of practical significance to the tung industry, it is of interest because it seems likely that the result is due to improved carbohydrate supply. Because of lack of water, photosynthesis must ordinarily be very limited in the leaves of cuttings.

"Mr. Hines reports that there is still no injury apparent on the trees that received very heavy applications of boron, manganese, copper, basic slag and cyanamid. In the orchard at Varnado thread blight is about as prevalent as last year, but the degree of severity is considerably less than when it was first observed in August 1940. A preliminary examination of the plots indicates that pruning out of the diseased branches last fall has been very effective in reducing incidence of the disease this summer. To date sprays of elgetol and bordeaux have been of little or no benefit...During late June, Hines and Fernholz set up a test of several wound dressings, including the liquid asphaltum recently favorably reported on by Tilford in Ohio. Wounds resulting from removal of branches on mature seedling trees, and from cutting back one-year-old budded trees, were treated.

LEMONS--AND HIGH BLOOD PRESSURE

Research work by Dr. Lawrence E. Detrick at the University of California has demonstrated that drinking lemon juice fortified with lemon peel extract will reduce high blood pressure, and ordinary lemon juice will reduce normal blood pressure, says the Pacific Rural Press for May 31. In these tests, 20 out of 29 women whose average age was 33, had their blood pressure reduced when an ounce of lemon juice in seven ounches of water was served to them daily with each meal.

ADMINISTRATIVE NOTES

Coal — The Office of Budget and Finance calls attention to the advice of the Advisory Commission to the Council for National Defense, that all Government gencies begin ordering and storing coal, in addition to quantities required for current needs, and to continue to order and store coal between now and the first of October, within practical limitations, in order to lighten winter peak loads on transportation and mining.

The Department is anxious to cooperate in every possible way with defense planning, and all space available for the storing of coal should be filled promptly either under the Procurement Division consolidated contracts for carload deliveries of coal, recently distributed to bureaus and offices, or under contracts that may be negotiated by the Department for deliveries in smaller quantities.

Post Office Buildings — A letter to the Secretary from the Fourth Assistant Postmaster General, dated July 2, 1941, reads: "The appropriations authorized by the Congress for the operation of, and for the furniture for activities in, post office buildings under the administration of this Department for the fiscal year 1942, are limited and it is incumbent upon us to exercise strict economy in those items in order to avoid the creation of a deficiency during the current fiscal year.

"With this in view we have given our postmasters implicit instructions concerning the use of artificial lighting; the use of supplies and in the submission of requests for furniture and equipment.

"As the field service of the Agriculture Department is one of our largest tenants, we solicit your assistance to the end that you please ask your field officers to cooperate with postmasters in the economical use and operation of their quarters."

Marking of Bids — The Director of Finance states that it has been observed that some bureau offices engaged in handling bid papers are indulging in the practice of making notations on bids, making corrections in the bidder's computations, and occasionally stamping a time of receipt on a set of bids, this time necessarily being later than the date and hour scheduled for the bid opening. Such markings have been noted on bids opened in the Division of Purchase, Sales, and Traffic as well as on field bids submitted for acceptance. The practice is not only frowned upon by the General Accounting Office but often leads to a request for an explanation of changes or notations appearing on bids filed with that office. TO REMEDY THIS SITUATION IT IS SUGGESTED THAT THE PRACTICE OF PLACING MARKINGS OR TIME STAMPS ON BIDS BE DISCONTINUED.

ADMINISTRATIVE NOTES

Reporting Purchases

The Business Office sent out on July 7, 1941, the following memorandum: "Word has just been received of a new procedure covering purchases which must be initiated for every office, section, and station of the Division having occasion to make purchases. This new procedure becomes effective July 1, 1941, and, although we regret the necessity of adding additional clerical work at any of our field stations, the information which will be required can only be furnished by the individuals who actually place the orders and receive the materials.

"In accordance with Secretary's Memorandum No. 684, dated January 3, 1936, this Bureau and Division prepared a field order form which was to be used for all purchases made direct from field stations. Check-ups which have been made from time to time indicate that most of our field employees are using these field order forms in accordance with the instructions. This form consists of a white copy, which was to be sent to the dealer, a yellow copy, which was to be retained in the fields of the field station, and a blue copy, which could be used for other purposes, such as checking the receipt of materials and supplies, or for any other purpose desired. Field stations which have been diligently and consistently using this form will not find it difficult to comply with the new rules in regard to purchases. Other stations or offices not preparing these purchase orders must immediately initiate this procedure. All orders issued henceforth for purchases made in the field must contain all of the following information: (1) Name and address of ordering office and date of order; (2) Name and address of vendor; (3) Name and address of consignee agency; and (4) Details of purchase: (a) Sufficient description of item to enable ready and positive identification; (b) Unit and unit price; (c) Number of units; (d) Total price; (e) Discount terms; (f) Delivery point if purchased for other than delivery destination; and (g) Required delivery date.

"It is recognized that some of these details may be difficult to furnish at the time the orders are transmitted to headquarters at Beltsville. However, they should be filled in as completely as possible. Likewise, any purchases made from the General Schedule of Supplies must show the contract item numbers and the contract TPS number if possible. The order forms must be prepared for every purchase, with the exception of services under leases or public utility contracts and miscellaneous small purchases made while employees are in a travel status.

"Inasmuch as there is no direct need at the field stations for the blue copies of the purchase orders, it is suggested that they be used to transmit to the Business Office the information required. These blue copies will be stamped "COPY FOR PROCUREMENT DIVISION," and on all future supplies of these forms sent to the field stations this information will be stamped on the blue copies. We are required to transmit a copy of all orders drawn by our field activities by the 7th of the month following the month in which purchases are made. This means that copies of all orders drawn, whether material has been received or not, should be in our hands in time to permit us to check them and transmit them to the Bureau offices by the 7th of the

month. Where there are large numbers of orders at any particular station, it may be desirable to transmit the blue copies to us as frequently as once a week; whereas, in cases where only a few orders are drawn during a month, probably one transmission could be made on the first of the month following the purchases.

"All of these instructions are intended to cover orders placed direct with dealers by the field stations. Any orders drawn through the Business Office at Beltsville will be reported by it. We ask you to please cooperate with us to the fullest extent in furnishing this information so that there will be the least amount of criticism in connection with the making up of the reports. Immediately after the first of August, then, we will expect to receive copies of all field orders drawn during July, with the same procedure to be followed in succeeding months."

Allotments By quarters — Speaking of purchases, the administrative officers of the Division extend thanks to the various sections and to the supervisors of field activities for the excellent cooperation received in connection with the early placing of orders during the Fiscal Year ended June 30, 1941. We were able to spread bids and purchases over a much more extended period than in former years—which helped a lot.

A new procedure is being adopted this year, in accordance with a Presidential order, requiring that allotments be made by quarters of the Fiscal Year in connection with anticipated expenditures; July-September, October-December, January-March, and April-June. Allotments for these periods will be fairly uniform, though seasonal work will inevitably increase expenditures during certain periods. This apportionment of expenditures by quarters will have an effect on large purchases, of course, and emergency expenditures, but employeesin charge of station activities will be able to estimate ordinary expenditures with reasonable accuracy and know about what funds will be available for supplies and equipment during the fiscal year.

It is important that you do not forget the limitations that may be put into effect at any time to equalize our expenditures during the Fiscal Year. You should therefore anticipate your purchases of supplies and equipment in a way to avoid purchases in "bunches." It would be well, for example, to go over your stock of glassware, chemicals, office and field supplies at least once a month, placing orders at frequent intervals. If it is known that certain equipment MUST be replaced or supplemented, do not wait until next May to get the bids or make the purchases; do it during the slack months (ordinarily from November to February) when regular expenditures of the Division are at their lowest. You know that this should be done; you know that it can be done; then let's do it!

ADMINISTRATIVE NOTES

Travel Whenever an employee of the Bureau performs travel on official time for which he is reimbursed by cooperative agencies, a Bureau letter of authorization must be obtained. The authorization must be specific as to itinerary, per diem allowance and limitations, the use of personal automobile, if authorized, including mileage limitations and use. The provisions of such an authorization must conform in every way to Department requirements where travel expense is paid from Federal funds.

This requirement, however, does not apply to collaborators. Where the worker is a split-salary employee, paid in part by us, it is not intended that this requirement shall apply to such work as he may perform for the cooperating agency, but it is felt that it should apply to work performed as a fundamental part of the cooperative undertaking.

Where the travel is frequent throughout the year, there is no objection to an annual letter of authorization of this character. The same close control should be exercised over such letters of authorization as over any other travel performed at Federal expense. A copy of the reimbursement voucher, certified as correct, must be furnished through the Division to the Bureau Accounting Office, covering all reimbursements under cooperative letters of authorization.

Federal employees who are reimbursed by cooperating agencies for travel expenses incurred under authorizations complying with the provisions of the foregoing paragraphs should exercise care in the preparation of their expense accounts to see that per diem claimed is not in excess of that which would be granted if the reimbursement were made from Federal funds, and since the salaries of such travelers are already taken care of, they should accept no other emolument or gratuity of any kind other than the authorized travel allowance.

Whenever it is necessary to travel on cooperative work in other than Government owned cars, special authority should be requested for such travel.

It is recognized that there may be some border line cases in connection with proposed travel under cooperative agreements. These should be presented with detailed explanation of attending circumstances.

DON'T FORGET! Copies of orders for supplies, etc. purchased by field stations direct MUST be mailed as promptly as possible after the first of each month so that the Business Office may complete its report before the 7th of the month. BETTER PASTE THIS OVER YOUR DESK!

Vol. 13 No. 15 August 1, 1941

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R.

The official organ of the Division, through which the staff at widely separated locations is kept informed of the progress of technical and scientific investigations at Beltsville and at various field stations. The News Letter also carries administrative orders and memoranda with necessary explanations and directions. Since the material used is often of an informal and confidential nature it should not be published without the approval of the Division. Often reports of field workers and others represent their personal opinions, and so are not necessarily the official and final word on the matters they discuss.

John A. Ferrall, Editor

Vol. XIII U. S. Horticultural Station, Beltsville, Md. No.16
August 15, 1941

Walnut Blight "Most of the week ending July 26th has been spent in the field taking results of additional studies on the control of walnut blight," writes Dr. Paul W. Miller from the field laboratory at Corvallis, Oreg. "The forepart of the week was spent in the Gaston, Dundee, and Sheridan regions. Very good control of walnut blight resulted from timely spraying in all of these districts. Thus, in spraying tests carried on in an orchard near Gaston, Oreg. two applications of bordeaux mixture 6-2-100 applied in the early prebloom and late prebloom stages reduced the incidence of infection from 43.8 to 6.4 percent. Yellow cuprous oxide, 1-1/2 - 100, gave equally as good control under these conditions, the incidence of infection in the plot sprayed with this material being 5.5 percent.

"Walnut orchards in the Gaston region show considerably more damage from sunburn than those in most other nut-growing districts in Oregon. The leaves as well as the nuts are affected, giving the tree a 'rusty' hue from afar as if the foliage had been blasted by fire. It is estimated that 10 percent of the crop in this region is affected.

"In the Dundee district walnut blight is not as severe as in the Silverton and Gaston regions. Even so, a substantial reduction in the incidence of infection resulted from timely spraying. For example, in spraying tests carried on in an orchard near Dundee, Oreg. three applications of bordeaux mixture 6-2-100 applied in the early prebloom, late prebloom, and early postbloom stages reduced the incidence of infection from 23.4 to 1.4 percent. Copper oxalate (20 percent copper) 3-100 and sodium copper polyphosphate 3-100 also gave good control, the incidence of infection in these plots being 1.1 and 3.2 percent, respectively. Under the conditions prevailing this season in this district both bordeaux mixture 6-2-100 and copper oxalate 3-100 caused a limited amount of foliar injury in the form of small brown spots between the veins. Sodium copper polyphosphate, at the rate of 3-100, on the other hand, caused no detectable foliar injury.

NUT INVESTIGATIONS

"Outstanding control of walnut blight was also obtained by timely spraying with bordeaux mixture in the Sheridan district. Thus in tests carried on in an orchard near Sheridan, Oreg. two applications of bordeaux mixture 6-2-100 applied in the early prebloom and late prebloom stages reduced the incidence of infection from 52.3 to 1.9 percent. There is a good demonstration of the cumulative effects from continuous spraying in this orchard also. A number of trees were left unsprayed this year that have been sprayed for the past four years. Only 14.6 percent of the nuts examined in this unsprayed plot were found infected, while trees of the same variety located on a steep hillside in an inaccessible part of the orchard that have never been sprayed contain 52.3 percent blight.

"The latter part of the week was spent largely in the Junction City district. Results of spraying tests carried on in this region were equally as outstanding. For example, in tests carried on in an orchard near Junction City, Oreg. two applications of bordeaux mixture 6-2-100 applied in the early prebloom and late prebloom stage reduced the incidence of infection from 29.2 to 0.3 percent. Yellow cuprous oxide 1-1/2 - 100 and copper oxalate (20 percent copper) 3-100 gave equally as good control, the incidence of infection in these plots being 0.6 and 0.3 percent, respectively. Under these conditions bordeaux misture 4-1-100 was not quite as effective as the 6-2-100 formula, the incidence of infection in the plot sprayed with the weaker concentration on bordeaux mixture being 2.7 percent as compared with 0.3 percent in the plot sprayed with the stronger concentration.

- - - ROBERT M. SALTER TO HEAD USDA SOIL AND FERTILIZER DIVISION - - -

Appointment of Robert M. Salter to head the Division of Soil and Fertilizer Investigations in the Bureau of Plant Industry was announced August 5. This division comprises the former Divisions of Soil Chemistry and Physics, Fertilizer Research, and Soil Microbiology. "We are particularly fortunate in obtaining the services of one who has such a broad knowledge of soil use and crop production in this new post," said Dr. Auchter. "He has been an able administrator and well-liked cooperator."

During the past year Mr. Salter has been director of the North Carolina Agricultural Experiment Station. He is nationally known in soils work, serving first as soils chemist and agronomist in the West Virginia Experiment Station from 1917 to 1921. He then became Professor of Soils at the Ohio State University and from 1929 to 1940 served as Chairman of the Department of Agronomy in charge of soils and crops at the University and Ohio Agricultural Experiment Station. He was made Vice-Director of the Ohio station in 1940, later accepting the directorship in North Carolina.

Mr. Salter expects to assume his new duties October 1, directing research activities in soil microbiology, legume inoculants, fertilizer manufacture and use, and investigations on soils with special reference to productivity and its problems as applied to managing soils to maintain crop production.

NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

"There is still relatively little scab present on the Schley pecan trees in our experimental plots, even though but two scab sprays have been applied," he writes July 26th. "The most serious scab is in the Sunny orchard, as is also the heaviest infestation of black aphids. The third scab spray, recently applied, should provide sufficient control for this season, but it may be necessary to apply another nicotine spray for aphids if they build up again.

"The trees in the Brown tract at Philema are putting on a noticeable amount of second growth as a result of the prolonged rainy spell. It is doubtful if there is enough yet to influence the crop of nuts on the trees, but it is approaching that point. The older trees in the Champion tract are not yet showing any second growth."

John R. Cole, Albany, Ga.

"I made two trips during the week ending August 2, in company with other members of the laboratory here, to Graves and Shellman to inspect orchards where large limbs were dying on trees 15 to 35 years old. We finally diagnosed the trouble as winter injury, and it is a condition that I have never observed previously. The care of the orchards has had something to do with this injury. In fact, orchards that have received heavy applications of nitrogen are the most seriously affected. This injury was no doubt the result of the sudden freeze that occurred last November 14th, when the temperature dropped to 22°F. While the trees were in full foliage...

"We have had more visitors this summer than at any time since I have been connected with the laboratory here. We are averaging five or six daily, and most of them are interested in driving over our plots located in nearby orchards. We had the pleasure August 1 of having Mr. and Mrs. C. A. Krug. He is with the Division of Genetics, Instituto Agronomico, Campinas, State of Sao Paulo, Brazil. They spent the afternoon here and we inspected Philema as well as the Taylor and other orchards in this vicinity. Mr. Krug was especially interested in propagation methods and in scab and rosette control..."

He had written July 26th: "Black aphids cause us more concern than scab for the reason that we are never able to judge or estimate when and where the heavy infestations will be. Last year we had practically none in the Taylor orchard, while at Fort Valley an extra application of nicotine sulphate was necessary to control them. This year it is just the reverse: We have the heaviest infestation at Taylor's that I have ever seen, even where we have used nicotine sulphate. At Fort Valley, we have practically no aphids!"

NUT INVESTIGATIONS

C. E. Schuster, Corvallis, Oreg.

"In the case of walnut trees, a great deal of the foliage that was injured has been dropped," he reports July 26th. "In cases of high temperatures many of the leaflets are often dropped. At the time of the heat wave the trees looked very bad, but a few days later they recuperated in appearance.

"The effect of the high temperatures on the nuts is more serious than the appearance of the nuts from the outside would indicate. This high temperature came earlier in the development of the nut than we have had within my experience. A slight yellowing on the outside of the husk in many cases indicates almost a complete blackening of the kernel inside. The shell generally has not started to harden, so that the damage apparently has developed where ordinarily it would not develop to any extent."

He had written July 19th: "Sunburn, which occurred during the hot spell when temperatures reached as high as 107°F. in the Willamette Valley, was very bad on walnuts. The nuts are completely burned on the top in many places on the southwest side of the tree. Filberts show the damage in the leaves. On the tips of the limbs on the south side many of the leaves have dried out so that they will crumble into powder when taken in the hands."

Clifton W. Van Horn, Yuma, Ariz.

"Wednesday of this week we had a summer rain squall, accompanied by the usual short sandstorm preceeding, he writes July 25th. "One small pecan tree that had been girdled above the bud was blown over but the bud will be O. K. I was afraid we would have damage to our cloth shade houses but apparently they escaped harm. The half inch of rain at least cleaned off the foliage nicely and left the leaves free of honey dew. Some of the aphis are no doubt lost in this way, even though the infestation has not grown more severe in the last week. Following the rain storm, our temperature cooled considerably. Yesterday the maximum was 94°F. whereas last Sunday it was 111°.

"Rapid changes are taking place now in the development of the pecans. Within the past two weeks, size has increased by at least one half if not more, a change to be expected of course since the seed coat is now expanding rapidly. Our crop here in the Yuma valley will undoubtedly be the best this year that we have had for several years, especially for the Burkett variety. Whether this is due entirely to the increased amount of cloudy weather during this past dormant season, or from some other cause, I do not know. It does emphasize, however, the necessity of our being able to measure this factor of sunshine, especially during the dormant period."

NUT INVESTIGATIONS

F. N. Dodge, Shreveport, La. (Robson)

"For the last two days of this week the ground was dry enough on the sandy end of the station for cultivation," he reports July 26th. "Two days work was done there and work started on some of the clay soil but had to be stopped because of rain again. This week I made the nitrate nitrogen tests for the cultural block soils and found them lowest since April. The continuous rains probably are the cause.

"The soil samples examined for pecan roots have shown big differences in the amount of roots in the different soil types. The greatest concentration was found in the sandy hill soil where defoliation always occurs last, and the least concentration--almost no roots--was found in the clay soil, where defoliation always occurs first. The most pronounced difference, however, was in the amount of new roots found in the different soil types, with none found in a clay location that has been continuously wet since April."

A. C. Gossard, Meridian, Miss.

"A convenient design was developed for making soil moisture absorption blocks for use with the Bouyoucos and Mick modified Wheatstone bridge, based on those tried by White-Stevens and Jacob at the Long Island Research Station, and by R. B. Allyn at the U. S. Pear Investigations Laboratory at Medford, Oreg. Several blocks were cast from plaster of paris and from a locally obtainable dental modeling stone, apparently similar in all respects to the Albastone used by these workers. These blocks are tapered cylinders with rounded lower ends (to aid in making a firm fit in the soil) cast around copper washer electrodes mounted on an insulated core. By the method of mounting used, the distance between these electrodes, which is the essential feature in measuring resistances, can be made very accurately uniform in all the blocks, so that any block or blocks may be used to calibrate the others. The modeling stone blocks will be checked against both the plaster of paris blocks made according to the same design and the rectangular plaster of paris blocks originally furnished the Bouyoucos and Mick instrument.

"The Asiatic chestnut trees seem to be making good growth in spite of the recent prolonged drought. There will be a fair crop of nuts on a few of the trees. One particularly interesting tree is a small Castanea henryi seedling that has as many burs on it as any larger or older tree of other species in the grove."

George M. Bahrt, Fairhope, Ala. (Tung investigations)

"This week I was called to several orchards regarding trees that had good foliage and a fair crop of nuts until recently, but had now dropped the foliage and fruit and were reported as dead," he writes July 26th. "In each case the trees had been injured by cold and in some cases were entirely girdled."

NUT INVESTIGATIONS

John H. Painter, Cairo, Ga. (Tung investigations)

"Observations made in the training plots set up this season shed some interesting light upon the subject," he writes July 26th. "The effect winter injury had upon buds and their ability to force has shown up quite noticeably. In one replicated test, it was evident that provided the buds were not injured by the cold, limbs could be forced out without actually notching by removing a piece of bark above the bud, but by merely making either a single knife cut or a double knife cut about an inch long about one fourth of an inch above the bud. An examination of the angle at which the forced branch comes out when a knife cut is made tends to leave the impression that the angle thus formed is less acute than when a notch is made. The knife cut and especially the double knife cut thickens up in a sort of protruding fashion that actually changes the position of the bud from a straight up and down position to an outward slanting position that makes the resulting crotch angle wider than when formed by notching.

"In the test that was set up to determine the best method of correcting excessive high crowns or bad crowns, the treatment in which the laterals were pruned half off and notches placed above buds desired to force below the old crown is by far the most promising. The half cut laterals leafed out early and the shading has probably been active in causing the newly formed branches to form a more horizontal growth habit with a correspondingly better angle.

"Information given by Mr. Rolfe Buckley that branches could be forced out below an old crown by making extra large notches has proved to be correct but as previously mentioned, it looks as if the larger the notch, the more acute the angle. I have forced out a sufficient number of branches, using a double knife cut, to make me feel that actual notching is a thing of the past, so far as I am concerned. The operation of making the knife cut is much faster and fool proof.

"At Lamont, Fla. in the 11 series of plots on winter injury recovery practices, where pruning alone, versus pruning and extra fertilization and fertilization alone and a check are compared; in 10 out of 11 cases the pruning alone seems best. In one case the pruning plus extra fertilizer looked better than the pruning alone. It was almost impossible to distinquish between the check and the fertilizing only treatments. In other words, it is my belief that the fertilizer used was unnecessary and therefore actually wasted. These plots have been clearly marked and staked out for future reference and of course it may be that final results will not run in keeping with the present appearance of the treatments."

NUT INVESTIGATIONS

Rulon D. Lewis, Albany, Ga.

"We have shown below some interesting data regarding the season variation, especially rainfall, and the size, by weight, of green pecan leaves and stem and nut samples collected from one of our experimental plots," he writes from the U. S. Pecan Field Laboratory on August 2. "Samples were collected on July 15 each year from the same trees and from the same area about the trees. The nut crop in 1939 was larger than the present 1941 crop.

	1939	1941
Rainfall April 1 to July 21	19.62 inches	6.61 inches
Leaves and stem samples	363 grams	354 grams
Pecan nuts	348 "	210 "

"The importance of measuring rainfall at the location of an experiment is shown from our rainfall records this year. Six miles from the above experiment we have another experiment located and the rainfall in this orchard for the same period has been 12.48 inches."

Howard E. Parson, Shreveport, La.

"More counts have been made in the Disease Block of trees at Robson on early foliage infection by scab, but some of the counts vary so much that they do not appear to be a reliable index of differences between treatments. The method of sampling mostly practiced has been to cut enough terminals within reach from the ground that had stopped growth early in the season to furnish split samples of 500 leaflets per count. In general I think the counts indicate that sanitation by itself on Delmas, Pabst and Schley pecans has not been effective in controlling scab this season and that spraying the trees as well as the ground with Elgetol has resulted in no more control than has sanitation by plowing."

Harold E. Hammer, Shreveport, La.

"By request from Barksdale Field I secured soil samples from several locations on the Barksdale flying field, determined available nitrogen, available phosphorous, and available potassium, soil acidity, and made recommendation for establishing grass sod on the field. We are glad to be of any assistance to them where possible, as they have been very accomodating by making aerial photographs for us each year and doing other favors."

ADMINISTRATIVE REMINDER

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DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"Very high temperatures prevailed the early part of the week, but the heat wave was broken Wednesday night by a thunder shower," he writes July 26th. "The storm on the 23d was very local in distribution but there was a general rain lasting for more than an hour during the afternoon of the 25th. These two storms will bring sufficient moisture to help the Elberta crop which will start to mature in the next few weeks.

"On Monday I read a paper written by Dr. L. P. Batjer at the summer meeting of the Arkansas State Horticultural Society. The paper discussed the use of the pre-harvest sprays to control the drop of apples. A number of growers asked questions at the conclusion of the paper.

"I visited the peach orchard near Joplin, Mo. which shows such marked varietal response to the November 21, 1940 freeze. The injured trees have made very poor recovery and the owner estimates that certain portions of the orchard will have to be replanted. The data in the following table give the estimated injury as of July 22, 1941. A final count of the entire orchard will be made in late September or early October to get an accurate record of the situation.

Variety	No. trees in planting	No. injured	Percent
Mikado	200	180	90%
Alton	200	100	50
Early Elberta ...	300	100	33-1/3
Elberta	200	4	2
Georgia Belle	300	45	15
Frank	200	30	15
Golden Jubilee ..	49	0	0

"The injury occurs in all plots of the orchard irrespective of elevation and it appears to be one of the most interesting cases of varietal response I have ever encountered. The lack of injury on the Golden Jubilee variety, the rows of which run diagonally across the plantings, is most striking. I have a full set of colored photographs as well as black and white pictures, showing examples of the injured trees."

He had written July 19th: "The fifth cover spray was applied to our apple plots on July 15th. "Since both scab and blotch are well under control in our plots, we omitted the fungicides and sprayed all the plots except one with arsenate of lead and hydrated lime. Phenothiazine was used on the one exception, since this material is supposed to be both an insecticide and a fungicide. The various sprayed plots are in excellent condition and so far only a minimum of spray injury has developed.

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan (continued)

"Our greenhouse experiment with Delicious apple trees supplied with boron deficient solutions has given very disappointing results. Typical symptoms began to develop in May, but early in June it was noted that the trees were beginning to grow again and the boron deficiency symptoms have disappeared. We have produced boron deficiency symptoms during the winter and early spring but feel that during the summer when the greenhouse ventilators are open, enough dust is carried into the greenhouse to contaminate our tests. Dr. Tharp, of the Cotton Division, informs me that he too has not been able to produce pronounced boron deficiency symptoms during the summer months in his cotton experiments. These results at least check our field observations since we have failed to find boron deficiency symptoms in the orchards of northwest Arkansas."

R. B. Wilcox, Pemberton, N. J.

"The blueberry harvest reached its peak during the week of the 14th, at which time about equal quantities of berries were sent to the fresh fruit market and to the canning and freezing trade." he writes July 23d. "I do not have exact figures on total shipments, but they were more than 2,000 bushels per day. Total shipments from New Jersey made through the Cooperative to date are about 35,000 bushels, and by the end of this week they will have passed the figure for the entire season of 1940. Harvesting has been hampered by rain throughout the season, and this was particularly true from July 17 to 21, when rain fell on each of the five days. Because of the wet season, a larger proportion of the fruit than ever before has gone into the 'Star' or unbranded grade, which will bring down the average price for the year. The market price at present is only slightly above that of canning berries, and has been maintained only because of the presence of the latter outlet. The season of cranberry bloom is past. In general, the early-drawn bogs have set a fairly good crop but later-drawn bogs ran into several days of bad weather during bloom, and their crop is scattering and much less satisfactory."

H. F. Bergman, East Wareham, Mass.

"Cranberries are now beginning to set and indications are that the set will be good on all bogs except in deeply flooded areas on some bogs where it will be relatively poor," he reports July 15th. "The percentage of flowers that set fruit will be considerably higher this year than last on nearly all bogs. An unusually heavy set is reported from a few bogs. Cabot blueberries are beginning to ripen. Picking will not begin until next week in most plantings although a few berries may have been picked this week."

DECIDUOUS FRUIT INVESTIGATIONS

Elmer Snyder, Fresno, Calif.

"After sub-normal temperatures at Fresno during June, the average maximum temperature for the first 15 days in July was 102.4°F., shade temperature, taken from our thermograph charts. The stage of maturity og grapes appears slightly earlier than in 1940 and more comparable to 1939 season to date. Some of the earlier vinifera types are edible and many of our seedlings are approaching the palatable stage. Many of the colored varieties are taking on some color and the 'Zante Currant' grapes will be suitable for harvesting in 10 days to two weeks. Incidentally, growers are being offered from 5 to 6 cents per pound for dried currants this season, compared to $65.00 to $75.00 a ton for other raisin types. It is estimated that there are approximately 4,000 acres of the 'Zante Currant' grapes in bearing in California, with yields ranging from one to more than two tons of dried product per acre.

"T-Budding of grape seedlings onto root stocks in the field has again proved very successful this season. A summary of this work indicates that 709 seedling progeny were budded, 2,352 buds were inserted (3 to 4 buds of some seedlings are inserted), 83.2 percent of the total buds inserted are growing, and 99.3 percent of the seedling progeny were saved. Thus the loss of seedlings by this method of propagating has only been 7 per 1,000 for this season.

"Green shoot whip-grafting practiced in the greenhouse late in May has produced some good unions and fairly vigorous top growth. Small tests were made with this type of grafting and results this season indicate this type of green grafting can be utilized to speedily increase the stock of new varieties or promising seedlings.

"A new departure was utilized in handling the grape seedlings this year previous to "T" budding. When the seeds were planted in flats they were spaced farther apart than normal, seedlings growing were not transplanted out of the flat but allowed to grow with some nutrient solution added, sufficient growth was made so that the "T" buds could be obtained without the additional labor of transplanting. Although smaller buds were obtained, the percentage take was satisfactory as indicated above."

G. A. Meckstroth, Willard, N. C.

Writing from the Coastal Plain Station on August 23d he says: "There is very little leaf spot and powdery mildew infection on blueberries this summer. I think this is due to the extended dry period we had here during the months of May and June. Ordinarily we have abundant infections of both these diseases by the middle of May. Even the Pioneer variety, which is more susceptible to powdery mildew than any other variety grown, is entirely free of it in some fields."

DECIDUOUS FRUIT INVESTIGATIONS

J. H. Weinberger, Fort Valley Ga.

"The 1941 peach season in Georgia will be almost cleared up by the end of this week, and as you know it has been a very disappointing season," he writes August 4th. "The only varieties in this section that proved profitable when shipped were Sullivan's Early Elberta, which sold for $1.35 to $1.75 per bushel f.o.b., and Fairs Beauty, represented by one small orchard. Many Hiley and Elberta peaches were not shipped because of market conditions, though most of the remaining Elbertas here eventually found their way to the canneries at 37-1/2 to 45 cents a bushel at the orchard, so they were not a complete loss. The F.S.C.C. is continuing to buy peaches, paying 75 cents a bushel this week.

"Records were taken last week on phony incidence in weak and vigorous peach trees. Previously in years of light infection, there appeared to be little relation between vigor of tree and susceptibility to phony disease, but his year when phony infection is severe, a much higher percentage of vigorous trees were found diseased. In one small area of a 5-year-old Elberta orchard where the trees were unusually vigorous, 18 out of 35 trees were infected. In another section of the same orchard where the trees were less vigorous but nevertheless were in good condition only 10 trees out of 350 were diseased. It is also interesting to note effect of variety in the above orchard, for there were approximately 17 times as many phony trees in Elberta as in an adjoining Early Hiley orchard of the same age. The relation of tree vigor to phony infection is also evident in our variety block, where almost one fourth of our well-fertilized trees showed phony this year. In Mr. Baird's weak Early Hiley orchard adjoining only a scattering of diseased trees occurred. The significance of these observations remains to be seen, but inspectors generally observe that the disease is worst in vigorous sections of orchards and in yellow-fleshed varieties."

ADMINISTRATIVE NOTE

Lubricating oils, etc. In a circular letter dated July 2, the Procurement Division directs that all Federal activities obtain their lubricating oils under the 1942 Navy Department contracts except oils for aviation use and oils for such special use as activities may be authorized to procure independent of the Navy contracts.

The Navy contract bulletin was sent to all concerned the latter part of June. If none of the oils listed therein will satisfy a special requirement, a request to purchase special oil or oils should be sent in to our Business Office, stating in detail the necessity therefor.

This does not prohibit the purchase of lubricating grease and oil listed in the General Schedule of Supplies, nor on credit cards under the various service station contracts.

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

C. E. Steinbauer (vegetable production investigations)

"On Monday a trip was made to Crystal Springs to make a final check up on the tomato variety tests," he writes for the week ending July 12th. "The 'clean-up' picking of green fruit was being made at the Truck Station, and the final picking at the Green Farm as scheduled for Tuesday. Final wilt ratings were made for each replication of each variety at both locations according to the state of survival of plants and the amount of blackening found when cuts were made at the base of each plant.

"Growers in the Crystal Springs area were well pleased with the prices and market they found for their crop this year. Undoubtedly this will be reflected in a greater acreage of tomatoes next year. Some buyers in the area discriminated against Gulf State Market for shipping this season and some carloads were turned down where it was known that there were Gulf State tomatoes in the pack. A large part of the crop was Rutgers this season. The green pack tomato season is now closed but a few ripe tomatoes, peppers, and lima beans are being shipped by truck or in mixed cars.

"Wilt injury had become very apparent in the Crystal Springs plots during the week, and is also more evident this week in our Meridian plantings."

ADMINISTRATIVE NOTE

You are reminded that all pay rolls for this Fiscal Year should be submitted on Form 1013, Revised, as amended March 3, 1939. This form includes the following certification that was brought to your attention in Mr. Roney's memorandum of June 19, 1941:

> "I further certify that the employment of the persons named on the within pay roll is not prohibited by any provisions of law limiting the availability of the appropriation(s) involved."

If you do not have a supply of these forms, the Business Office will furnish them upon request.

When the old form is used the above certification should be stamped or typed on the same side of the pay roll on which the names of the employees are listed, and must be signed. Several pay rolls have been received with this certification stamped or typed opposite the signature of the person submitting the pay roll. This space is for the signature of the Bureau official approving the pay roll and should be left blank.

June 5, 1941

BUDGET AND FINANCE CIRCULAR 417

Procedure for Preparation and Presentation of Claims for Amounts due Deceased Employees.

This office has observed in reviewing claims for direct settlement that in numerous instances considerable difficulty is experienced by the relatives and legal representatives of the decedent, and officers and employees of the Government in the prepartion, execution, and submission of claims for amounts due deceased Government employees.

For the information and assistance of the administrative offices there is outlined below the procedure for preparing and assembling the necessary documents comprising such claims:

1. Standard Form No. 1055 should be prepared and signed by a person who believes that he is entitled to all or a portion of the amounts due the deceased at the time of his death. (General Accounting Office Regulations No. 42 and supplements thereto)

2. A short form of pay roll, Standard Form 1013-d - Revised, covering salary due decedent at time of death, should be prepared. Citation should be made on the pay roll to the name of the disbursing officer and his symbol and voucher numbers in connection with the pay roll on which the decedent would have been paid had he lived. (Regulation 3186 of the United States Department of Agriculture) Citation also is required to the name of the disbursing officer and his symbol and voucher numbers of the pay roll on which the final retirement deduction was made. (General Accounting Office Regulations No. 54, Sup. 9)

3. Any traveling expenses due should be claimed on Standard Form No. 1012. In event there is any amount due the United States because of advance of funds, Standard Form No. 1039 - Revised should accompany the travel expense voucher. (General Accounting Office Regulations No. 59, Sup. 2, and General Accounting Office Regulations No. 88)

4. Checks which can not be paid because of death of payee should not be cancelled if entire proceeds of check are due decedent, but should be disposed of as follows:

a. When in possession of heirs or legal representatives

Should accompany Form AD-42 with claim on Form 1055. (See Regulation 3186 of the United States Department of Agriculture)

b. When in possession of a Government officer or employee.

Should be returned to the disbursing officer for forwarding to the General Accounting Office for safekeeping and lawful disposition. Statement should be made on Form AD-42 as to the date of transmission of the check to the disbursing officer. (See Regulation 3158 of the United States Department of Agriculture, and Paragraph 14, General Accounting Office Regulation No. 80)

5. The pay roll and travel expense voucher, each bearing administrative approval, together with any other supporting papers, should be attached to the Standard Form No. 1055.

6. It is not necessary for the administrative office to secure any pertinent papers (such as receipted funeral bills, waivers from undertakers, etc.) from claimants or other interested parties, as the responsibility of completely developing claims rests with the General Accounting Office. (Budget and Finance Memorandum No. 31, dated January 6, 1937)

7. The pay roll, travel expense voucher, Standard Form No. 1055 and any other supporting papers, should be transmitted with undated Form AD-42 to the Director of Finance. (Regulation 3186 of the United States Department of Agriculture.

8. Form AD-42 should be submitted in triplicate, one carbon bearing the initials of the administrative official of the bureau. When signed, a dated carbon will be returned to the bureau indicating the name of the person who signed the report. The Form AD-42 should show opposite words "account of" the name and address of the claimant, together with the name of the deceased employee. If claim is also made for an unpaid check, a paragraph should be inserted in the report to the effect that "Application is also made for the proceeds of check No. _____ dated ____, issued by (name and symbol of disbursing officer) in the amount of $_____, covering (salary, travel, etc.) for the period ____ D. O. Voucher No. _____ The records of (name of administrative office) indicate that the amount is still due the deceased payee.

Defense Organizations

B. P. I. Memorandum No. 1216, dated July 24, 1941, from the Office of the Chief of Bureau, states that a number of inquiries have been received in which employees in the field inquire regarding the Department's attitude on their participation in local defense organizations. To clarify this matter, an inquiry was made to the Department Office of Personnel. We have now been advised that this Department has no objection to employees becoming members of the local Home Guard units.

LETTERS OF AUTHORIZATION

"The Department Office of Budget and Finance has requested that all supervisory employees in the Department give careful scrutiny to travel to be performed under their direction with a view to restricting travel to that most necessary for the efficient conduct of the work," says BPI Memo. 1214 of July 19, 1941. "The Budget Bureau and committees of Congress are scrutinizing travel expenditures closely, and it is incumbent upon us to be in a position to justify all expenditures we may make for travel purposes. It is recognized that a certain amount of travel is inherent in the conduct of our work, yet by careful planning it may be possible to curtail some travel by meeting its objects in other ways. We must give travel careful supervision to avoid that which is unnecessary and to be assured that expenditures are completely justified."

HERE IS WHERE WE COME IN! We cannot act on a request for a letter of authorization for travel unless we have full particulars. Minute details are not necessary, but it is essential that an itinerary, the necessity for the trip, need for any special authority requested, such as permission to use a personally-owned automobile, request for leave en route, need for an assistant to accompany you, etc. be stated and clearly explained in submitting your request for the travel authorization. It pays to put in this explanatory statement even more information than the Business Office is apt to need, since the absence of needed information is certain to hold up approval of the authorization.

Memo. 1214 continues: "It is requested that additional time be allowed for consideration of letters of authorization in the Bureau. It is appreciated that there will frequently be emergency travel that necessitates immediate attention, and we are always glad to give these exceptional cases prompt consideration. Many letters of autnorization are coming through by special messenger with "rush" tags, however, where the travel to be performed has obviously been under contemplation for some time. Frequently these are followed by other messengers chasing around with requests for advance of funds. It is only rarely that a substantial trip has not been carefully considered for some time, and with foresight the letter of authorization should be requested in time to avoid undue efforts to expedite. No travel should be undertaken until the letter of authorization has received Bureau approval. Employees who have letters of authorization should carefully observe the funds authorized, and not exceed the authorization. It is hoped that these requirements will be observed and steps for their enforcement not become necessary." (BETTER READ THAT LAST SENTENCE AGAIN—IT MEANS THAT A REFUSAL TO HEED THIS WARNING MAY COST YOU A PORTION OF YOUR REIMBURSEMENT!)

The Business Office needs from 5 to 7 days to get an authorization approved under ordinary conditions; longer if it contains special provisions or an advance of funds is needed. Since the number of days allowed for a trip count only from the day travel actually starts, no harm is done by asking for the authorization even a couple of weeks in advance.

Vol. 13 No. 16 August 15, 1941

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division, through which the staff at widely separated locations is kept informed of the progress of technical and scientific investigations at Beltsville and at various field stations. The News Letter also carries administrative orders and memoranda with necessary explanations and directions. Since the material used is often of an informal and confidential nature it should not be published without the approval of the Division. Often reports of field workers and others represent their personal opinions, and so are not necessarily the official and final word on the matters they discuss.

John A. Ferrall, Editor

Vol. XIII U. S. Horticultural Station, Beltsville, Md. No.17
September 1, 1941

Enviable Employment

The history of the human race has been summarized in as few as seven words: They were born; they suffered; they died. Tombstones frequently offer even greater testimony to the seeming futility of human effort, for many of them bear only the dates of birth and death--with a blank space between. Most of us, however, believe that what we are and the work we do is important. The ideal job is the one that enables us to make some contribution to the general welfare while at the same time earning a living for ourselves. It seems to us that the Division of Fruit and Vegetable Crops and Diseases provides us with that type of enviable employment.

This thought has been brought to us just now by reading a statement prepared to summarize a few of the whys and wherefores of the Division's program. As you probably know, we must and do justify our existence. In the following pages, Dr. Magness is permitting us to give you the substance of this statement. It is urged that you read this carefully. It will not only be informing to you, but should suggest to you how to present information to us covering your work currently each year, bringing out clearly the more important phases, with brief, clear-cut statements of important accomplishments.

Essentially, of course, the object of the work of the Division is to increase returns to growers of fruit, vegetable, potato, nut and ornamental crops, and to insure a satisfactory supply of the important foods so essential to the diet of the people. It does this (1) by developing varieties by breeding that are more resistant to diseases and adverse climatic conditions and that are of superior dessert and culinary quality; (2) by improving orchard, field, and greenhouse

management, including fertilizing, irrigating, pruning, spraying and cultivating; (3) by developing knowledge of diseases and how they may be controlled, including the introduction of new fungicide materials; and (4) by working out the best methods of handling, shipping, storing, and utilizing the harvested products, most of which are highly perishable. Figures taken or compiled from "Agricultural Statistics" and the U. S. Census returns give the following as the farm value in recent years of these crops:

Fruit crops	$421,532,000
Truck crops	256,873,000
Potatoes	250,199,000
Ornamental crops	209,000,000
Nut crops	20,575,000

Any serious reduction in the quality or quantity of these crops as a result of disease epidemics, faulty handling, unfavorable climatic conditions or other causes, would be extremely serious not only to the farmers producing them but to the health of the whole people. The worth of ornamental crops in improving home surroundings both within and without the residences cannot be evaluated in dollars and cents, although unquestionably they contribute tremendously to the stability and morale of American home life. Research to develop superior fruit, vegetable, nut and ornamental crops, and to improve production, handling, shipping, and storing methods, is essential to the continued sound condition of the industry.

GENERAL PLAN

The work of the Division consists primarily of field and laboratory experiments, largely cooperative with State agricultural experiment stations, other Federal agencies and the producers of fruit, vegetable, nut, and ornamental crops. National headquarters are at the U. S. Horticultural Station, Beltsville, Md., from which point the work in all sections of the United States is directed.

PROJECTS

At present the investigations are organized into seven major sections, based primarily on a crop grouping:

1. Deciduous fruit investigations
2. Citrus, avocado, and other subtropical fruit investigations
3. Nut investigations
4. Vegetable investigations
5. Floricultural and ornamental horticultural plant investigations
6. Potato investigations
7. Methods of handling, transportation and storage, and market diseases of fruits, vegetables and flowers.

To further the work of these various sections, field stations or field laboratories are maintained in many areas of horticultural crop production. Locations of permanent field stations and laboratories are as follows:

FIELD STATIONS

CALIFORNIA,	Fresno
	Indio
	La Jolla (Torrey Pines)
	Oakville
	Winters
COLORADO,	Greeley
FLORIDA,	Orlando
GEORGIA,	Fort Valley
	Philema
	Tifton
LOUISIANA,	Robson
MAINE,	Presque Isle
MARYLAND,	Beltsville
NORTH CAROLINA,	Willard
OREGON,	Medford
SOUTH CAROLINA,	Charleston
TEXAS,	Brownwood
WYOMING,	Cheyenne

FIELD LABORATORIES

ALABAMA,	Fairhope
ARIZONA,	Tucson
ARKANSAS,	Fayetteville
CALIFORNIA,	Indio
	Fresno
	Los Angeles
	Pomona
	Riverside
	Sacramento
FLORIDA,	Gainesville
	Orlando
GEORGIA,	Albany,
	Cairo
	Experiment
ILLINOIS,	Chicago
INDIANA,	La Fayette
	Vincennes
IOWA,	Ames
LOUISIANA,	Bogalusa
	Shreveport
	University (Baton Rouge)
MASSACHUSETTS,	East Wareham
MINNESOTA,	St. Paul
MISSOURI,	Columbia
NEW JERSEY,	New Brunswick
	Pemberton
NEW YORK,	Geneva
	New York City
OREGON,	Corvallis
	Hood River
UTAH,	Logan
WASHINGTON,	Wenatchee
WISCONSIN,	Madison

PROGRESS AND PROGRAM

The following examples of accomplishments under the appropriation for the work of the Division are cited to show progress in one or more aspects of the broader problems confronted. They will serve as illustrations of the way in which the problems are attacked and as examples of some of the results obtained. In our limited space it is not practicable to give anything like a summary of results under each of the hundreds of active research projects but these few examples will serve to show that an excellent dividend is being returned on the investment in the Division's work.

DECIDUOUS FRUIT INVESTIGATIONS

One of the problems that has confronted fruit growers ever since orchards were established has been the question of what fertilizer materials are needed by the trees. With a decrease in the supplies of farm manure and greater dependence on commercial fertilizers, the question whether particular fertilizer elements are needed by the trees has become increasingly important. Numerous orchard experiments conducted during the past forty years have failed to give a clear indication of the general need of fertilizer materials other than nitrogen.

Beginning in 1935, experiments were set up in the greenhouse where apple and peach trees were grown in sand cultures with various definite quantities of the different elements required for plant growth. The point at which supplies of such elements as potassium and nitrogen reduced growth of the trees was determined, and chemical analyses were made of the leaves of the trees having restricted growth. As a result it was possible to determine the quantity of the elements in the leaves when the tree was just beginning to have an inadequate amount. Thus with apple and peach trees when the amount of potassium in the leaves was less than 1 percent of the dry weight of the leaves, the tree had an inadequate amount for normal growth. Following the obtaining of this basic information, surveys have been conducted in some areas of the United States to determine the general condition in the orchards. Peach orchards, the leaves of which analyzed less than 1 percent potash, have been shown to be benefitted by potash applications. This combination of laboratory and field work has now given a basis for determining quickly by laboratory analyses whether or not trees in a particular orchard or district will respond to applications of potassium fertilizers.

Additional work now being developed is designed to give a similar background for additional elements including calcium or lime and phosphorous.

A second important investigation pertains to the development of spray materials to protect plants from fungous diseases. For almost a half century copper sprays, and more recently sulphur sprays, have been depended upon for control of fungous diseases of orchard, truck, and ornamental crops. While effective fungicides, the materials frequently cause serious damage to the plants on which they are applied.

In the search for new fungicide materials a systematic testing of a great number of organic compounds or of combinations of organic and inorganic materials is being carried out. Laboratory tests are first conducted to determine whether or not the materials are sufficiently toxic to spores of fungi to offer promise as fungicides. If they pass the first test they are then applied to test plants in the greenhouse as well as out of doors to determine how much injury they cause the test plants. If the application of material causes little injury to the test plants, it is ready for application to orchard trees.

Of the several hundred materials tested to date, the following chemicals or chemical compounds have shown particular promise: Phenothiazine, the thiuram disulphides, diphenylamine derivatives, and the thiocarbamates. These have given at least some degree of control of such serious diseases as apple scab, peach brown rot, and cherry leaf spot, and may eventually come into practical use.

While in the present stage none of these organic materials can be recommended for commercial spray practice, it is believed probable that with further development of the tests, including methods of application, some of these materials will become valuable fungicides, possibly less injurious to the sprayed plants than those that are now available.

In preliminary experiments, for example, phenothiazine has given fairly good control of apple scab and has shown some indications that it might control bitter-rot. While it has been reported as delaying maturity of apple fruits, our tests in the East and Middle West appear to show that the fruits are quite normal, not only free from injury but with a beautiful finish. The leaves have not been injured and have been noticeably a darker green than those of unsprayed trees. Phenothiazine has also controlled mild cases of cherry leaf-spot. Its principal weakness appears to be lack of adherence, though a considerable improvement in this respect has been obtained by finer grinding. If this product adhered better, was effective over a longer time, and could be produced cheaply in large quantities, it might be developed into a practical fungicide

This question is becoming of increased importance as defense needs make it appear that there is likely to be a shortage of copper. If copper is to become something more than the common, always obtainable, cheap substance it has been in the past, then the finding of substitutes for it in connection with sprays is vitally necessary. At the present time there are no substitutes that can be recommended to take the place of copper in the control of some of the most serious diseases of grapes, pears, apples, small fruits, pecans and other nut crops, citrus and subtropical fruits, potatoes, tomatoes, and other vegetables. With the groundwork that has been laid, the threatened shortage of copper may do much to hasten the development of successful organic fungicides, thus turning a threatened loss into a worthwhile gain!

NUT INVESTIGATIONS

Since the development of pecan growing as an orchard enterprise, fungus diseases attacking the shoots, leaves, and nuts of pecan trees have multiplied and increased in intensity so as to cause very serious loss in the principal pecan districts. During the past five years, outstanding progress has been made on methods of controlling these diseases.

The life histories of the causal organisms were first worked out and spraying experiments initiated based on the knowledge of these life histories. Bordeaux mixture was found to be the best fungicide but when applied in accordance with the usual formula of equal parts, by weight, of copper sulphate and caustic lime it often caused so much injury to the trees that it was unsafe to use. Other fungicides were tested but none was found satisfactory. Finally, the proportion of lime to copper sulphate was greatly reduced so that a neutral, or slightly alkaline mixture, resulted. After many trials it was found that this bordeaux mixture was principally effective only when applied prior to the time of infection. Sprays had to be applied often enough to keep the foliage and nuts covered with a film of the fungicide during the infection period.

As an illustration of the control resulting from the new spray, and sanitary methods of pecan disease control There is the case of a five-year experiment in spraying Schley pecan trees with low lime bordeaux mixture to control scab. The average net return per tree was $6.65 a year from nuts produced by the sprayed trees, and but 77 cents per tree from the unsprayed check trees! These sprayed and unsprayed trees were grown under identical conditions in an orchard with an excellent production program, nuts being produced annually. The sprayed trees averaged 51 pounds of nuts each year; the unsprayed, 11. Only 68 nuts from the sprayed trees were needed to make a pound. It required 101 nuts from the unsprayed trees to weigh a pound. The small size and generally poor quality of the nuts from the unsprayed trees resulted in an average price of but 7 cents a pound, while themuts from the sprayed trees brought 15 cents a pound. Thus the average gross return from a sprayed tree was $7.65. After deducting $1.00 to cover cost of materials and spraying, we have a net of $6.65 from the sprayed trees to contrast with the return of but 77 cents a tree from the unsprayed trees. This impressive difference is given added importance by the fact that it is becoming apparent that all pecan varieties are susceptible to scab where conditions are favorable for scab development.

Much additional work is needed to develop the best spray programs for pecan trees, of course. Unfortunately, the black pecan aphis appears to increase in number following the use of copper sprays. The reason for this is not yet known, and needs to be investigated. Additional work on the details of the spraying program, both from the standpoint of materials and time of application, is also necessary.

VEGETABLE INVESTIGATIONS

The release of the Pan America variety of tomato in the fall of 1940 represents the culmination of probably one of the most important, as well as most intensive pieces of work conducted by the vegetable section of the Division in the last few years.

This variety is similar to the Marglobe, the most important single variety of tomato in this country, in its general horticultural characteristics, but has the advantage of being practically immune to Fusarium wilt, while Marglobe, one of the parents of the Pan America, has only an intermediate or partial resistance. Pan America was developed specifically to overcome this deficiency in Marglobe that resulted in damage from wilt in certain areas in certain years.

The production of Pan American we believe, represents a record for high-speed breeding work with the tomato. One parent was a particular fusarium-immune strain of Lycopersicum pimpinellifolium, the currant tomato, sent to us by a scientist in Peru through the Division of Plant Exploration and Introduction of the Bureau of Plant Industry. The other parent was the Marglobe. The original interspecies cross was made in 1936. The F_1 was immediately back-crossed three successive times incidental to growing two crops per year using both the field and the greenhouse. About 50,000 plants of the third back-cross were grown in 1938 from which about 40 satisfactory appearing, large-fruited segregates were obtained. Progeny of these were promptly tested against wilt in the greenhouse by newly developed, standard techniques, and all but four eliminated because of measurable susceptibility. The progenies of one of these four were then grown on a large scale and further selected to fix the horticultural type and disease resistance. Quantities of seed were released in the fall of 1940 sufficient to permit this variety appearing in the trade in 1942.

The finding of virtual immunity to fusarium wilt in the South American currant tomato and its successful incorporation into suitable commercial forms represents a practical if not the ultimate solution to the wilt problem. With this problem out of the way, the greatest need in the tomato field is the development of varieties resistant to the diseases that cause loss of foliage. Loss of foliage terminates fruit production and usually results in sun burning of the fruit already formed. This project has arranged a division of labor with the Regional Vegetable Breeding Laboratory at Charleston, S. C., in the breeding of tomatoes for resistance to defoliation diseases that now cause losses far greater than those due to wilt.

Workers of this Division created the Marglobe parent of the new Pan America tomato also, of course. It was likewise an emergency operation--to save the tomato shipping industry of Florida from ruin. The Marglobe saved the Florida industry--and then from being a mere stop-gap shipping tomato has gone on to become the most important tomato in the United States.

Although stress in the foregoing statement has been laid on the breeding of disease-resistant tomatoes, it should not be overlooked that years of highly technical and basic research on the disease organism itself and the interaction between that organism and the host plant was carried on as an integral part of this breeding program. Without the basic mycological and physiological studies of the organism and years of work to develop a standardized technique for determining relative resistance of the host and relative virulence of different forms of the disease, the breeding work could not have been accomplished. Geneticists and pathologists worked hand in hand throughout. Neither could have succeeded alone.

IMPORTANCE OF BREEDING DISEASE RESISTANT PLANTS

"The control of plant diseases through the breeding of resistant varieties is less spectacular than some other agricultural achievements," wrote Dr. Wm. A. Taylor in one of his reports as Chief of Bureau, "but the results in recent years establish this as the most economical and most effective method of avoiding increasing losses in regions where climatic and other factors require large acreages of the same crops year after year."

A startling confirmation of the value of this work was given in the address of a retiring president of the American Phytopathological Society a few years ago when he pointed out that our introduction of resistant strains of lettuce and cantaloups into commercial culture in California meant an increased annual return to growers of more than seventeen million dollars! This is not the total value of the crop, but his estimate of the sum growers received over and above what they could have expected from growing the standard, susceptible varieties. In some locations, of course, the susceptible varieties could not have been grown at all.

The impressive thing, however, is that this increased annual return of $17,000,000 just about offsets total expenditures for all fruit and vegetable crop and disease investigations since the creation of the Department of Agriculture!

Incidentally, the creation and introduction of the new mildew resistant cantaloups gave us an excellent opportunity to demonstrate the effective teamwork of the Division's staff, for the creation of the new variety was merely one step. The specialists in handling, transportation, and storage proceeded to show that the cantaloups could be allowed to reach full maturity on the vine and then by proper pre-cooling and transit refrigeration be shipped to New York City and remain in good marketable condition long enough for all trade demands. This was a matter of vital importance to California growers since the prevalence of mildew had forced the picking of the older varieties earlier and earlier until people would not buy them and were saying that it was no longer possible to get melons fit to eat!

SMALL FRUIT BREEDING

Not only have we been successful, in connection with our vegetable breeding work, in producing in the Marglobe, the most important tomato variety of the country, but in the small-fruit breeding experiments we have contributed the leading strawberry variety. Out of the multitude of strawberry varieties, the Blakemore ranks easily first in favor with the American growers. In fact, it now constitutes about 25 percent of the total strawberry acreage of the United States.

The strawberry breeding work started out with definite objectives (1) to develop a strawberry of superior dessert quality suitable for culture in the Eastern United States, and (2) to produce satisfactory varieties for canning, preserving, and freezing preservation. Varieties adapted for eating fresh may not be satisfactory for canning, of course, as cooking tends to alter their flavor, shape, and color. For canning we need a strawberry with firm flesh and a color that might not be considered the best in the raw state. For preservation by freezing, neither the dessert varieties nor the canning sorts may be satisfactory.

In addition to the Blakemore, two other hybrids of our creation, Dorsett and Fairfax, were introduced in 1933 and are now extensively grown, particularly in northeastern States where their very high flavor makes them the standard of dessert quality. Another variety resulting from our breeding work, the Redheart, is a freezing and canning variety grown near Portland, Oreg. though not adapted to the eastern States.

The Brainerd blackberry, the first commercial result of the present small fruit breeding program, inaugurated in 1919, is now the standard variety for the late season in the region of Portland, Oreg. and is grown to some extent in the southeastern United States, northward to the latitude of Washington. Three promising new raspberries have been originated and introduced, and considerable attention is now being given to blueberries.

This small-fruit breeding project is of especial interest as a demonstration of effective cooperation. For example, the blueberry work in New Jersey is in cooperation with the New Jersey station; that in Massachusetts in cooperation with the Cranberry and Blueberry station at East Wareham, Mass.; and that in North Carolina and Georgia with the State stations.

In like manner the strawberry, raspberry, and blackberry work in North Carolina is carried on in cooperation with the State station; and the work in Oregon with the Oregon State station. In Maryland breeding for resistance to the red-stele root disease is in cooperation with the Maryland Agricultural Experiment Station.

Many other State experiment stations test out new selection before they are named and introduced into commercial culture. This insures that the station men know the new varieties as they are introduced.

POTATO INVESTIGATIONS

One of the outstanding developments in the potato breeding program in recent years has been the development of better methods of obtaining true seed necessary in the making of potato crosses. Normally the buds and flowers of most commercial potato varieties tend to drop before the seed develops. It has been known previously that the drop was less pronounced in northern latitudes than farther south. Consequently, until recently, most of the hybridizing in connection with the breeding of potato varieties for resistance to insects and diseases has been carried on in northern Maine. Even there, however, a few hot days or a few cloudy days at a critical time will cause most of the buds and blossoms to drop. Thus a year's hybridizing may be largely lost.

Investigations conducted in the greenhouse at the U. S. Horticultural Station, Beltsville, Md., and at Greeley, Colo., to determine the environment best suited for flowering and seed setting demonstrated that the length of the period of daylight was the most important single factor for most varieties. A daylight period of 16 to 17 hours was found to be sufficient. These long days are secured by supplementing the natural day with artificial light. A cool temperature is also necessary but this can be controlled by crossing the crop in the greenhouse during late winter and early spring.

As a result of these experiments, practically all of the potato hybridizing work is now being conducted in the greenhouse where the length of daylight and other environmental conditions can be controlled. This year more hybrid seed has been secured than ever before, which makes it possible to expand greatly the testing work in cooperating States. This improvement in methods and technique will thus greatly facilitate the work of the National Potato breeding Project which already has resulted in the naming of eight new potato varieties that are proving of outstanding value because of their disease resistance and adaptation to growing conditions in various parts of the United States.

Additional studies relative to the technique of producing potato seed need to be made on the intensity and quality of light. Preliminary tests indicate that fluorescent light produces a high light intensity with little increase in temperature and certain varieties have responded better under fluorescent lights than under Mazda lights. It is possible that a higher light intensity will prove more effective in preventing flower drop.

Producing true seed from a potato plant, of course, is the chief means of breeding new varieties--each seed represents a potential new variety. However, the potato plant seldom produces seed in the field outside of a few favored areas, hence the importance of the "artificial" climate. At Beltsville, for instance, the artificial greenhouse "climate" has produced larger and more uniform seed crops than under good field conditions similar to those existing in Maine and Colorado!

FLORICULTURAL AND ORNAMENTAL HORTICULTURAL PLANT INVESTIGATIONS

An ideal in most fields of endeavor is to combine the ornamental with the useful. The Division has always included work with ornamentals in its program--because it has realized their usefulness. The growing and handling of ornamental plants furnish a livelihood for thousands of people in this country. Some of our most popular bulletins are concerned with the growing of ornamental plants, millions of copies having been distributed. Our specialists put down the foundation upon which the commercial bulb industry of this country was built--and put down that foundation at a time when they were told that it could not be done!

In recent years we have been doing some interesting work with the popular Easter lily. The research program has produced results that are already proving valuable to American florists and also to farmers, especially in the Southern States, where new cash crops are in demand. Over 95 percent of all our Easter lilies are now imported from Japan, and about four years ago the Division was requested to develop a better lily, free from disease, with larger flowers, and capable of being produced in this country.

Several new Easter lilies have been produced by breeding and it has been shown that bulbs grown in the southern part of the country can be dug and by proper storage and handling treatment can be forced for the Thanksgiving and Christmas markets. Until this work was done, the only lilies available were Japanese stocks, the bulbs of which had been carried over one year in cold storage. This treatment weakens them so much that they usually do not average two flowers per plant. The southern-grown American bulbs produced and handled as in these investigations develop plants having four to six flowers.

It has also been found that the new Easter lilies can be multiplied very rapidly through the use of plant auxins, or hormones. The bulbs can be broken up and the individual scales treated with growth substances, also the leaves and stems can be sprayed with growth substances and then the stem cut into small sections, each section of which produces bulbs. This work is of great importance because of the present uncertainty of the foreign sources of lily bulbs which have previously supplied the American markets.

With the further development of these new lilies and methods of propagating them, and growing and handling the bulbs, American florists will be independent of foreign sources of supply and a new noncompetitive cash crop will be available for farmers in certain sections of the South

Some idea of the possibilities of the Easter lily work may be obtained by considering that in the past we have imported about twenty-five million bulbs a year. We have now shown that these may be produced in this country, and commercial lily production has already been established on a solid foundation.

HANDLING, TRANSPORTATION, STORAGE, AND MARKET DISEASE INVESTIGATIONS

Carbon dioxide is one of the gases given off in large quantities as a result of the normal respiration of fruits and vegetables. It has been known for many years that carbon dioxide in the atmosphere surrounding fruits would reduce the rate of the normal ripening processes and would reduce the growth of fungi causing decay. It was also known, however, that excessive quantities of carbon dioxide would result in bad flavors in many products.

With this as a background, several years ago careful experiments were started to determine the tolerance of various fruits and vegetables to different concentrations of carbon dioxide. Tests were made on the possibility of applying carbon dioxide to fresh fruits in transit as a substitute for or supplement to ordinary refrigeration, particularly in connection with the control of rots and diseases.

As a result of laboratory tests, followed by small-scale shipping tests and ultimately by full carload shipping tests, it has been established that the use of carbon dioxide to supplement refrigeration is of much value for the transportation of sweet cherries from the Pacific Coast to Eastern markets. As a direct outgrowth of this work, shippers in the Pacific Northwest have made increasing use of the carbon dioxide method during the past three years and now it is used practically 100 percent on sweet cherry shipments. The gas-treated cherries ripen less in transit and have less decay than those shipped under ordinary refrigeration, and outsold the latter fruit by about 25 cents per box. The gas treatment costs $30.00 per car, but shippers state that their increased returns from its use averaged about $400.00 per car. Approximately 1800 cars per year of sweet cherries are shipped from the Western States to Eastern markets, thus a gain of $370.00 per car applied to the shipments from these Western States would mean a net profit to the sweet cherry industry attributable to this research of about $666,000.00 per year!

Laboratory studies are being continued covering a wide range of fruits and vegetables. Tests conducted to date indicate that the treatment can be employed successfully with plums and pears, though carlot tests have not yet been made. Further experimental work is also necessary to develop economial and efficient ways of applying the gas treatment. Since the ordinary railway refrigeration car is not gas-tight, there is consequently a wastage of gas with correspondingly higher cost of the treatment.

In the matter of returns from handling, transportation and storage investigations, a speaker before the American Institute of Chemists recently estimated the value of the degreening process used with oranges at four million dollars a year to producers of citrus fruits in Florida; and perhaps an equal amount to producers in California! Our workers hold a Public Service patent on the so-called "trickle" method of applying ethylene in this degreening. This method is now used altogether in Florida and to a large extent in California also.

PUBLICATIONS

No research job is complete until the findings are made available to those who need and can use them effectively. Thus the ultimate aim of research is publication--the printed word, radio, addresses, correspondence. Information is our product, and we believe that the record will show that we distribute that product efficiently and economically.

The Division of Fruit and Vegetable Crops and Diseases handles close to a million pieces of mail each year. Much of this is in the form of letters, presenting someone's specific problem, that merit prompt and adequate replies. Fortunately we are usually able to answer the inquiry by mailing or giving reference to published bulletins. We now have publications on most of the important fruit, nut, vegetable and ornamental crops. Some of these bulletins have been translated into foreign languages. A few have been incorporated into standard textbooks. Some of the more popular in the Farmers' Bulletin series have reached circulations of two million copies or more each.

In distributing our product, information, we have not neglected the spoken word--over the radio and in the form of personal addresses. Sometimes an address delivered by one of our specialists before a convention or a growers' meeting may have an even greater influence than the printed word. This is particularly true where the specialist appears before key men of industries or at conventions of trade associations, manufacturers' groups, or farmers' meetings.

Of late years, too, we have been taking more and more advantage of the opportunities offered for prompt publication of results in agricultural and farm papers and in the scientific journals. Some of our outstanding achievements have aided the industry concerned more quickly and more widely through the friendly cooperation of such papers. During the past year 307 papers were approved for publication in outside journals.

Our workers during the same period contributed 33 papers to the bulletin, circular and leaflet series of the Department; and prepared rather thorough revisions of 16 others. In addition they checked and had reprinted 63 other Department bulletins and circulars dealing with the investigations of the Division. There were also a score or so of infor-al mimeographed briefs and circular letters prepared to meet special conditions or demands.

In this connection, it is well to keep in mind that the prompt and effective distribution of information helps greatly in checking criticism, for nearly all criticism is based on lack of information. When we show clearly what we are doing and have done, it becomes evident at once that agricultural research is not an expenditure but an investment--and an investment of the gilt-edge type.

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R.

The official organ of the Division, through which the staff at widely separated locations is kept informed of the progress of technical and scientific investigations at Beltsville and at various field stations. The News Letter also carries administrative orders and memoranda with necessary explanations and directions. Since the material used is often of an informal and confidential nature it should not be published without the approval of the Division. Often reports of field workers and others represent their personal opinions, and so are not necessarily the official and final word on the matters they discuss.

John A. Ferrall, Editor

Vol. XIII U. S. Horticultural Station, Beltsville, Md. No.18
September 15, 1941

Cabbage and Vitamin C. In an informal talk over the radio, under the auspices of the South Carolina Economic Society, Dr. Charles F. Poole of the U. S. Regional Vegetable Breeding Laboratory at Charleston, S. C., recently gave some very interesting data concerning the vitamin C possibilities of cabbage. The talk was one of a series approved in connection with the Division's policy of participating in local agricultural affairs and thus furthering the prompt dissemination of its research findings.

"In comparison with the most readily available sources of vitamin C recommended by dieticians and physicians,-tomato, strawberry, and citrus fruit juices,-" explained Dr. Poole, "cabbage takes a preferred position. The maximum vitamin C readings reported from numerous publications on vitamin C content of human and animal food are: Tomato, 72; strawberry, 86; citrus fruit juices, 98; and cabbage, 158. The only superior sources of this vitamin available to the American dietary are black currant--but not red currants,-guava, pepper, cauliflower, turnip tops, and kale. We have not yet attempted purposely breeding cabbage for higher vitamin C content, but from all considerations there is reason to believe no difficulty exists to raising it to 200 mg per 100 gm weight to compare with present figures for turnip tops and kale.

"At the U. S. Regional Vegetable Breeding Laboratory our routine search for superior breeding cabbages includes taking chemical readings on vitamin C along with estimates of cold hardiness and general head characters. Inbreeding as practices among important cabbage

VEGETABLE INVESTIGATIONS (cont'd)

varieties has produced sister inbred lines showing wide differences in vitamin C content as well as external characteristics. The spread ranges from 50 to 54 mg vitamin C per 100 gm of weight for the usual run commercial varieties, and 70 to 80 mg for our seven best inbred lines of Volga and Charleston Wakefield. On the basis that the daily optimum requirement of this vitamin in the diet is 25 to 100 mg then one-half pound or, roughly, a quarter of a medium sized head of any ordinary commercial variety from the grocery store supplies the amount required, whereas one-sixth of a head from the best of our inbred lines supplies the full daily requirement.

"Promising varieties thus far inbred are Volga, Charleston Wakefield and Wisconsin Ballhead, and Savoy. But Red Acre, a variety not yet inbred, is significantly higher in vitamin C than commercial stocks of those already mentioned. Accordingly, we may expect some inbred lines from Red Acre to excel in vitamin C the best inbred lines already obtained.

"Reports of vitamins A and B in cabbage are not yet extensively treated in the literature of plant biochemistry. Data available so far indicate that as a source of vitamin A cabbage is only fair. But from the well known fact that vitamin A is associated with depth of leaf coloration and that cabbage varieties vary greatly in leaf color, we may expect ranges for these vitamins comparable to that found for vitamin C although doubtless not reaching anywhere near the same relatively high points on the scale...

"Although the housewife has to take what the grocer carries, she can shop at different grocers, and when she demands vegetables having high vitamin and mineral content, the seedsman, grower, and commission merchant soon know about it. Consumers now know that the necessary vitamins and minerals are present not only in vegetables of a certain kind, but of a particular appearance.

"Leafy vegetables with plenty of green chlorophyll are almost sure to contain most of the protective elements, hence bleached out articles like too white cabbage, corn, lettuce, and celery are becoming increasingly avoided. There is something new under the sun when the housewife prefers green Utah, a Giant Pascal type, celery and green-headed cabbage and lettuce.

"She wants these as she does brown rice and whole wheat bread, because she is learning to avoid vitamin deficient foods. Today very few farmers will feed their livestock white corn, and their wives show a preference for a yellow corn which has the precursors of vitamin A. Not all consumer preferences are well founded, of course, but in general whenever the housewife has been able to learn about food values and other qualities in relation to well balanced diets there has been an increasing demand for vegetables of the right kind."

SUBTROPICAL FRUIT INVESTIGATIONS

W. W. Aldrich, U. S. Date Garden, Indio, Calif.

"The fruits of the current date crop have just about completed their period of rapid enlargement, and their color is changing from green to yellow with pink tints," he reported August 1st. "It is this stage in which Crawford has consistently found the fruits most susceptible to cracking during periods of humid weather. Therefore, when the nights of July 21 and 22 became relatively humid and the day and night of July 23 became unusually humid, we were not surprised to find considerable cracking of fruits on the morning of July 24. Then when .07 of an inch of rain fell July 24, we expected sufficiently severe cracking to result in the tip shrivel and blackening called 'blacknose.' Observations thus far indicate this was the case.

"The Deglet Noor date crop will probably amount to 14 to 15 million pounds, which would be the largest crop to date for this relatively new industry. Picking in the earlier areas (such as at the U. S. Date Garden) will probably start about September 14, and in the late areas (such as at the Cavanagh cooperative plots) about October 1. Fruits of the Khadrawy variety are turning yellow, and will probably begin ripening about August 25.

"Henderson and Hoadley, working on the water penetration plots at our Martinez station (12 miles south of Indio) are finding that 10-ton applications of gypsum and of alfalfa hay, respectively, have increased water penetration above that of the check; but this increased penetration has not appreciably increased rate of leaf elongation. Crawford and Hutchings are getting the field data on our fourth year's study of the effects of water deficits at different times in the summer upon fruit quality; while Long and Spurr are sectioning fruits taken from these irrigation plots. Although Young and Stockinger have been successful in maintaining nitrates above 10 ppm in the third and fourth foot depths of the sandy soil in the Robeson cooperative plots, by applying 6/10 of a pound of nitrogen per palm every 20 days (irrigation every 10 days) they have been unable to detect any response of the presumably nitrogen deficient palms."

J. R. Furr, Pomona, Calif.

"The harvest of Valencia orange plots in the Sunny Hills orchard was completed recently," he writes July 31st. "Since part of the land on which these plots are located has changed ownership, this harvest of the crop of fruit set in the spring of 1940 terminates the work at this location.

"These plots were established to study the influence of soil moisture conditions on the development of root rot. While root rot failed to show up in any of the plots in the two years of differential treatment the effect of the treatments on set of fruit and yield are rather interesting. The

SUBTROPICAL FRUIT INVESTIGATIONS

J. R. Furr (continued)

irrigation treatments were as follows:

Wet plot--soil moisture content not allowed to drop below about half way between field capacity and the wilting range
Dry plot--trees allowed to wilt before each application of water
Wet Spring plot--similar to Wet plot to mid-July; growers' practice thereafter
Dry Spring plot--similar to Dry plot to mid-July; growers' practice thereafter

(Growers' practice was to irrigate about once in five or six weeks. Trees were usually under appreciable water deficit before irrigation.)

"Records of number and weight of fruit produced by each tree were taken for two years before the treatments were started, and for the two years under treatment. During the two years before the differential treatments were started the grower had allowed these trees to suffer severe water shortage as a root rot control measure.

"As related to the 1937 and 1938 crops the average number of fruit per tree in 1939 on the Wet and Wet Spring plots showed a marked increase, and on the Dry and Dry Spring plots a somewhat less marked decrease, the first year of treatment. In 1940 the position of these plots as to numbers of fruit produced was just reversed. Yield curves showing the average number of fruit per 100 cm^2 cross section of trunks suggested that the dry trees continued under treatment an alternating cycle which had been established under the grower's dry practice. Apparently the ample water supply in the spring of 1939 upset this cycle in the Wet and Wet Spring plots, so that a very heavy crop was set in 1939 and a very light crop followed in 1940, the 'on' year for the trees which were continued under relatively dry conditions. However, if the numbers of fruit for the two years under treatment are totalled the differences in numbers of fruit produced under the various treatments are probably not significant. There was, however, because of increase in size, a very definite increase in weight of fruit produced on the Wet plots which was given an ample water supply throughout each season under treatment.

"Extensive counts of leaves and fruit on tagged branches in 1939 showed that there was little difference in number of fruit per 1,000 leaves on the different plots. This, of course, suggests that in 1939 the set was closely related to the amount of leaf surface of the trees in the different treatments."

HANDLING, TRANSPORTATION AND STORAGE, AND MARKET DISEASE INVESTIGATIONS

Edwin Smith, Wenatchee, Wash.

(When after all these long months of silence we received a report from Ed, headed "Delicious Maturity", we thought that he was referring to our advancing years, but we see it's really about apples! JAF.)

"A meeting of the Committee on Delicious Maturity of the Washington State Horticultural Association, of which the writer was appointed a member, had its second meeting in Yakima on August 9th, and was attended," he writes. "The final recommendations of the committee were that a period of 145 days from full bloom be taken as the main factor in determining when the maturity of Delicious and Red Delicious apples shall be satisfactory for picking in a given district, with exceptions for crops where maturity is advanced, or retarded. Full bloom is to be the date when the king blossoms are shedding petals.

"Many felt that setting a date when the first car of Red Delicious could be shipped based on 142 days from full bloom to harvest had proved a bad procedure. It helped the maturity of the first car but by that time many cars of Red Delicious had sufficient color for packing but were very immature. There had been many 'first cars' and a flood of immature apples reached the market. Some of these came from districts which had no business to pick Delicious for another 10 days. In other words, after the first car shipping date, the 'bars had been down.' There are certain crops where maturity is advanced and it was felt that these orchardists should not be penalized by having to wait from four days to a week and come in on a market flooded with immature Red Delicious.

"The intent of the committee is that 145 days from full bloom will hold back the bulk of the crop several days longer than it has been held back before, but that giving the inspectors some latitude to judge the actual maturity of exceptional crops will permit a more gradual start of early shipments. No doubt the inspectors will be deluged with growers who think they have exceptional crops and will also be put to the test by growers and shippers who pay no attention to 'days from bloom' or flesh characteristics of their fruit but who go ahead and pick for shipment with disregard for the inspection office. The test will be to condemn such fruit for not meeting grade on account of immaturity.

"It was proposed that a maximum number of days be established for over-maturity. (Over-maturity and over-ripeness came up for much discussion.) This we consider a bad approach to the problem because some crops picked at advanced maturity and properly handled give the consumer better fruit than many crops picked at optimum maturity but which do not receive timely or adequate refrigeration..."

DECIDUOUS FRUIT INVESTIGATIONS

Elmer Snyder, Fresno, Calif.

"Table grape shipments have been continuing, averaging about 140 cars per day during the week," he writes August 23d. "The picking of Zante Currants for drying has been in progress for a week or more and the picking of the Thompson Seedless for raisin drying started the latter part of the week in the earlier ripening districts. One estimate of the California grape production this season is as follows: 1,000,000 tons for wine purposes; 700,000 tons for drying to make raisins; 600,000 tons for table grape shipments--total 2,300,000 tons.

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

C. E. Steinbauer (vegetable production)

The final green-pack tomato pickings in the variety and cultural blocks were made the middle of July and notes on apparent wilt resistance taken. It was discovered that there was a very severe infestation of the entire tomato area with the root-knotnematode. Examination of roots of every plant after the final harvest indicated a 100 percent infestation; hence the tomato test this season indicates not only wilt resistance but tolerance to root knot as well. While the matter of wilt injury and menatode injury is not confused in this year's test, the fact that some varieties were able to stand up well in spite of the two troubles makes the data valuable nevertheless. Four of the most promising of the lots in the test this year were U.S. 39W3 (40 W p 17), Pan America, Targinnie Red/Marglobe (40 CS 58), and Ponderosa-Marglobe - Marvana--J.Baer (40 CS 71)."

N. H. Loomis (Small fruit investigations)

"On Thursday August 7th a trip was made to the blueberry planting at Ellisville, Miss. Although the season was nearly over, it was evident that the fruit was unusually large. A fungus disease, identified as a Monilia, had done considerable damage and many of the worst infected bushes were never picked. During the past two years I have pruned a few bushes for observation. The fruit size apparently was not affected although it was much easier to pick and a very desirable type of growth was induced. It also lowered bushes that were too high for economical harvesting. The owners were so impressed with the effect of the pruning that they are planning to prune the entire planting this winter.

"One of the most outstanding grape crosses is Champanel x Caco. The quality still leaves a good deal to be desired, but it is quite an improvement on the Champanel...In peaches we have lately had quantity but not quality. Due to the excessive rainfall over a period of at least three weeks the fruit was watery and rather tasteless and did not compare with the quality of the earlier fruit..."

DECIDUOUS FRUIT INVESTIGATIONS

M. A. Smith, Columbia, Mo.

"The Department of Horticulture in a recent communication has estimated that the apple crop in Missouri will not be as heavy as in 1940," he reports August 15th. "This is due primarily to the November, 1940 freeze that seriously affected the northwestern portion of the State. The crop has been estimated at about 75 percent of the 1940 crop or about a million bushels of commercial apples. Growing conditions up to August 1 were satisfactory in most Missouri orchards. Since that date the hot dry weather has had a deleterious effect on the crop. Varieties such as Jonathan and Delicious are already beginning to drop and it is anticipated that hormone sprays to assist in holding the apples on the trees will be used by many commercial growers.

"The peach crop in the State is now beginning to be harvested. According to latest reports, Missouri will probably have more peaches than it has produced in any year since 1931, in spite of the fact that most of the peach orchards in the northwestern third of the State were killed by the November freeze. The final effect of this freeze on Missouri horticulture is yet to be determined and every day the injury shows up more seriously in many sections.

"Mr. W. R. Martin, extension horticulturist, reports that the serious injury to apples is limited to areas north of Hannibal, Waverly and Kansas City, with the most seriously injured areas north of St. Joseph. In some of these areas it is possible that as much as 75 percent of the apple trees were killed outright or so seriously injured that future production is questionable. Further south in the State the injury amounts to perhaps 15 to 25 percent and is limited to the most tender varieties such as York, Stayman, Rome Beauty, Delicious and Maiden Blush. Many trees that still appear entirely vigorous at this writing have sufficient trunk and crotch injury to perhaps kill the trees by fall or during the next year. An estimate of the injury from the standpoint of the entire State would perhaps be 10 to 12 percent of the total apple trees killed outright or injured so seriously that their removal will be necessary. Injury to peaches apparently covers a wider area since recent observations have shown injured trees as far south as Newton, Lawrence and Greene counties in southwest Missouri."

R. B. Wilcox, Pemberton, N. J.

"The blueberry shipping season here is finished and total shipments through Cooperative from New Jersey were just over 51,000 bushels, an increase of one-third over last year's crop...We have found a bog of a cranberry variety new to us, selected many years ago from native New Jerseys. The bog is very uniform and the berries attractive. We have set up a cafeteria test to learn the resistance of the variety to false blossom..."

NUT INVESTIGATIONS

George M. Bahrt, Fairhope, Ala. (Tung investigations)

"Very little discoloration of leaves appears in our plots in Alabama and Western Florida except in two of the sodium borate plots in the Baldwin orchard," he reports August 23d. "There are signs of malnutrition in both the Milton and Fairhope vicinities, however, where the trees have had improper care or have been placed under unfavorable conditions. The discoloration present in our Alabama plots appears where 35 or 70 pounds of sodium borate per acre, plus 6-8-4 and 4-8-4 fertilizer were applied. Not all of the trees are affected in the former but at least one tree per plot shows slight boron excess injury. Where 70 pounds of sodium borate were applied one of the two trees is in the advanced stage of boron injury. The other tree is affected but slightly. No detrimental effects are noticeable where 17.5 pounds per acre or less of sodium borate were applied.

"In boron injury the first area to be affected is the margin of the upper seven eights of the leaf that becomes brown and papery and later cups up as the condition becomes more acute. The area half way between the main veins becomes affected. The veins and area on either side of the veins remain normal green in color. The affected patches in the under surface of the leaf are more or less rectangular in shape and are arranged in a line with the sides separated only by small veins. The outer margin of the rectangles are the same shade of green as the upper surface. Within this area is a more or less irregularly shaped patch of dark brown. This surrounds a lighter splotch that is brittle and papery and depressed...

"I could detect no injury to trees receiving a total of 560 pounds of either ferrous sulphate, manganese sulphate, zinc sulphate, magnesium sulphate or copper sulphate, 280 pounds of titanium dioxide, 17.5 pounds of barium chloride, 35.0 pounds of vanadyl sulphate or 35 pounds of strontium chloride in addition to the 6-8-4 and 4-8-4 fertilizer. In the various levels of less common nutrient experiment, trees treated with zinc sulphate appear to have a longer terminal growth than the trees of other treatments..."

B. G. Sitton, Shreveport, La.

"During the week I visited trees in various parts of South Louisiana from which scion wood has been collected and grafted on to trees on the Pecan Field Station," he writes August 16th. "Those trees have been reported to be heavy producers of good quality pecans and we want to keep them under observation. In general there were few or no pecans on any of the trees in southern Louisiana; in fact, I saw only two trees that had a full crop. The remainder had none to 25 percent of a crop. The foliage of most of the trees is in good condition except for a small amount of brown leaf spot on some. The tree on the place of Eloie Theroit from which was collected pecans having excellent nut characteristics, was seriously damaged by brown leaf spot and had lost about 25 percent of the foliage at the time of my visit and the remainder of the foliage had so many spots it will probably drop soon."

NUT INVESTIGATIONS

George F. Potter, Bogalusa, La. (Tung investigations)

"Records of the pollination experiment conducted this spring by Dr. Angelo indicate that insects and in particular the honey bee, may pollinate tung flowers," he writes in his report of August 9th. "A tree, completely covered with muslin tent and containing a hive of bees, set a full crop, but tree L-14, a selection that we believe to be very promising, set practically no fruit under a muslin tent without bees, except where pollinated by hand. On a 'pie slice' of a third tree covered with a muslin tent it appears that the number of fruits set is only about 20 percent of that that set on the remainder of the tree which was in the open. The muslin tents may interfere with both insect and wind pollination, but it is evident that whether or not the wind plays a role under orchard conditions, bees can effect pollination.

"Female flowers covered with a paper bag and with no male flowers present, always failed to set. If male flowers were included in the bag an occasional fruit set, but the proportion is very low. Clusters of blossoms covered with a 16-mesh wire screen gave a much lower set than in the open, regardless of whether or not there were male flowers inside the wire screen. Female flowers in the open but with all the petals removed, sometimes set but the proportion is much below that of flowers in the open from which the corolla had not been removed. Dr. Angelo believes under orchard conditions some wind pollination occurs and also that female flowers, which for the most part are in an upright position, may be pollinated by male flowers dropping through the trees and striking them...

"Mr. Kilby and Mr. Moore have begun some additional investigations on the distribution of roots of the tung trees growing on different soil types. To date they have taken samples from one plot of trees growing on Cuthbert soil in Pearl River County, Miss. In this soil series there is a sandy surface horizon about ten inches deep, which is well filled with rootlets. Beneath this there is an exceedingly tough red clay that becomes sandier the deeper one goes. Roots are found as much as six feet deep. This is the block of trees that, a great deal to our surprise, has rated high in growth and production among all of our soil type plots. Originally it was thought that the Cuthbert clay is so tough and hard that the trees could scarcely thrive upon it. Mr. Moore has also spent some time on his map of the original 75-acre soil management plot at the Tung Farm. All of the field work is done and the map is practically completed...

"Dr. McCann has completed a study of the relative development of the fruit buds under the various treatments. Thus far there is no indication that different levels of nitrogen, low, medium and high, have any significant bearing on the date of differentiation or rate of development of the blossom buds. There is some indication that the buds are formed somewhat

NUT INVESTIGATIONS

George F. Potter (continued)

earlier on trees without a crop than with those bearing a full load of fruit. This experiment is about as extensive as it is feasible to make it, the entire test comprising 24 seven-year-old trees. However, since the trees are seedlings, variations due to inherent characteristics of the individual trees tend to mask effect of treatments. Dr. McCann has also made some excellent new photographs of early stages of flower development...

"Last spring Dr. Fernholz made extensive observations of the cold injury to open pollinated seedlings from a considerable number of different parent trees. The seedlings from 20 individual trees were observed independently on two different farms some 25 miles apart. This week he has found that the correlation between percentage injury to seedlings of the same parentage on the two farms is .545. With 20 pairs of observations, this correlation is rather highly significant. This adds one more bit of evidence to that previously presented, establishing the fact that some strains of seedling tung trees are significantly hardier than others."

Felix S. Lagassé, Gainesville, Fla. (Tung investigations)

"Mr. Myhus, agricultural attaché of the U. S. Consular service at Buenos Aires visited the station and surrounding groves and reports that numerous small plantings of tung in certain sections of the Argentine give considerable promise of success," he writes August 16th.

"Dr. Reuther reports that a statistical examination of data comparing the rates of photosynthesis of shoot leaves on manganese treated and untreated check tung terminals indicate that manganese significantly increased the efficiency of the foliage. This effect began about two weeks after the treatments were applied. At the outset of the experiment, 25 pairs of terminals showing distinct foliage symptoms of manganese deficiency were selected, and one of each pair was dipped in a 1 percent manganese sulfate solution to which lime was added. At the end of about two weeks distinct greening up of chlorotic foliage was to be noted on the treated terminals. No effect of the treatment on assimilation can be seen in the measurements made during the first two weeks, but in the following two and one half weeks the effect was significant...

"An alarming report from the American Tung Company resulted in a hasty visit to its planting at Capps where Mr. Painter and Mr. Brown joined us in an inspection of a large block of trees many of which were badly affected with an interveinal necrosis and chlorosis of the leaves. Thus far it is anyone's guess as to what the trouble is. The problem is deemed important because it occurs on land highly recommended for tung. The soils of the affected area are Red Bay and Ruston loamy fine sand and fine sandy loams, and to all appearances are no different than adjacent blocks that show no injury. Many of the trees have only the interveinal necrosis whereas others have only the marginal and interveinal chlorosis..."

NUT INVESTIGATIONS

John R. Large, Albany, Ga.

"Two Chinese chestnut trees, Nos. 7411 and 7555, at Philema, Ga. were found to have trunk cankers considered to be caused by chestnut blight, Endothia parasitica (Murr) And. and And.," he writes August 16th. "In the field small yellow pustules were observed on the surface of the cankers. Specimens of bark stored in the moist chamber developed typical Pycnidial 'spore horns.' Upon microscopic examination of the contents of one pustule typical two-celled ascospores were found. These are the first chestnut blight cankers observed at Philema."

C. E. Schuster, Corvallis, Oreg.

"Two days of this week were spent with the Western Nut Growers Association on a field tour," he reports August 16th. "The day devoted to a study of filbert orchards was heavily attended, while the second day, devoted to walnuts, was lightly attended. The price of filberts during the last few years together with prospects for good prices in the future is encouraging the planting of filbert orchards and creating a great deal of interest. The condition of the walnut market, though, is discouraging. In one walnut orchard visited part of the trees had been removed in a thinning program during the past three or four years and the trees were more heavily loaded than any I've seen. Contrasted with these were trees still standing in the regular plantings, with poor foliage and light crops. The grower now feels that he waited many years after the proper thinning time, although the orchard is only about 30 years of age."

Clifton W. Van Horn, Yuma, Ariz.

"In comparing the Yuma, Salt and Safford valleys for aphis infestation I found Safford with the most serious number at this time," he writes August 16th. "Most of the trees are averaging about 40 aphis per leaf. The leaves are sticky with the honey-dew and it is dripping from the trees. Several pecan growers are getting quite concerned and somewhat interested in control measures. Portions of the Salt River Valley had similar infestations earlier in the season but have relatively few at this time. Yuma orchards have again started to build up. It continues to look as though predators have been responsible for keeping the numbers relatively low at Yuma, but past experience would indicate that we will have greater numbers yet this season.

"Here at Yuma we should harvest more Burketts this year than previously. The crop in the Salt River Valley is about normal, or possibly a little lighter in some orchards, while it is definitely light in the Safford valley, especially in the Burkett variety.

"During the past two weeks we have had 2-1/2 inches of rain. One inch of this fell the afternoon of August 14th in less than an hour!"

ANNAND AND HOYT HEAD ENTOMOLOGY AND PLANT QUARANTINE

Dr. P. N. Annand and Mr. Avery S. Hoyt have been appointed as Chief and Associate Chief, respectively, of the Bureau of Entomology and Plant Quarantine, effective August 16. Dr. Annand succeeds the late Dr. Lee A. Strong. He has been one of the Assistants Chiefs of that Bureau since 1939 and has been with it since 1929. He was born in Telluride, Colo. in 1898 and graduated with a B.S. degree in 1920 from Colorado Agricultural College, specializing in entomology, and with M. A. and Ph. D. degrees from Leland Stanford University in 1922 and 1928. Before coming with the Department he was engaged in sugar beet insects research work and later was a member of the staff of the San Mateo Junior College.

Mr. Hoyt has been one of the Assistant Chiefs of the Bureau of Entomology and Plant Quarantine since 1934. He was born in San Diego, Calif. in 1888 and graduated from Pomona College in 1910 with a B. S. degree. He held various positions in the State Department of Agriculture of California.

State Guard Units

During the period that the National Guard has been called into the service of the United States, some States have established State Guard or Home Guard units for the purpose of emergency duty within the State. Employees of the Department of Agriculture are free to participate in such local defense organizations.

Employees of the Department who are members of State Guard or Home Guard units, however, are not entitled to military leave for the purpose of engaging in training or any other activity of such units. Their absence from official duty in the Department while participating in the activities of such organizations may be charged to annual leave, or to leave without pay if annual leave is not available.

HUNGER SIGNS IN CROPS: A SYMPOSIUM

It is a matter of keen gratification that members of our staff (Dr. H. A. Jones, Mr. B. E. Brown, and Dr. George M. Bahrt) cooperated in the preparation of the symposium "Hunger Signs in Crops," sponsored by the American Society of Agronomy and the National Fertilizer Association, under the editorship of Mr. Gove Hambidge of the Department.

This new book, written by a committee of 14 specialists, describes some of the principal types of malnutrition in plants and tells what can be done about them. The fact that the symposium originated in leading laboratories and experimental fields gives it added weight and usefulness, especially in view of the importance of the research being conducted on the effects of shortage of trace elements, those indispensable mineral nutrients needed only in minute quantities.

ADMINISTRATIVE NOTES

Unskilled labor Employed on l.a. It has been the studied policy of the Bureau to restrict the employment of unskilled laborers under letter of authorization to the minimum practicable with due regard for the work to be performed, points out BPI Memo. 1224 of August 22, 1941.

Employment under letter of authorization should be restricted to temporary intermittent workers, and ordinarily to a maximum of 90 days in any one fiscal year. A careful check should be made to be sure the individual employed has not been working for some other branch of the Bureau or some other branch of the Department, as the 90 days permitted include other Government service. Wherever the circumstances are such that a regular appointment can be made through the Washington office, and payment made on payrolls submitted through the usual channels, this method should be followed. Employment under letter of authorization must be definitely restricted to intermittent employment, and is authorized only when regular appointments are not practicable. It is preferred that employment of intermittent workers be made through appointment whenever practicable.

Under recent legislation by Congress, in general only citizens may be employed. The temporary employment of other persons in the field for periods of less than 60 is permitted, but should only be done when citizens are not available. Employment in excess of 60 days of a non-citizen will not be passed for payment...In all cases of employment under letter of authorization, the affidavit on subversive activities must accompany the voucher.

Automobiles Some of the field stations have been sending the Business Office books containing operation records of Government-owned motorized equipment (Form AD 187) and summary (Form AD 188). While it is true the memorandum stated that these were to be send at the end of each Fiscal Year, as the forms were not sent out until April 1, 1941, and as an additional supply has not been furnished us, it is suggested that these be retained during the Fiscal Year 1942 unless we are requested for a report sooner.

RONEY GOES TO FOREST PATHOLOGY

When we announced that Dr. Lee M. Hutchins had been appointed head of the Division of Forest Pathology, we did not realize that this was the forerunner of our loss of another well liked associate. Walter D. Roney, right bower in the Business Office, has taken over the head clerk job with Forest Pathology.

ADMINISTRATIVE NOTES

Telephone Because of the confusion that has been caused by the use of the toll credit cards issued by the Bell Telephone--the mixing of personal and official charges, that is--the Comptroller General's office has requested that the use of such cards be discontinued. If any members of the Division staff have toll credit cards, they should return the cards to the Bell Telephone System at once and advise the Business Office that this has been done.

While such cards are issued primarily for the purpose of identification of those to whom issued in order that they may more readily make official telephone calls while absent from Washington and for charging the cost thereof to the Department, thus eliminating the necessity of immediate payment of cash for every call, the Accounting Office inspectors found a considerable number of instances where official and personal calls were confused and the collection of the cost of the personal calls made difficult.

In this connection, the number of official long-distance telephone calls made by officials and employees traveling in the field has been consistently increasing. It is believed that much of the business transacted by such calls could be handled by telegraph or air mail at much less expense. It is suggested that this matter be given consideration with a view to reducing the number of unnecessary long-distance calls.

If officials and employees in the field find it necessary to make long-distance telephone calls to their office in Washington or elsewhere (reimbursement for which should ordinarily be claimed on their expense vouchers) and find themselves without sufficient funds to pay for same, the telephone company should be requested to reverse the charges, in which cases they will be billed to Washington.

Tire Chains Request has been made by the various manufacturers of tire chains that the Procurement Division bring to the attention of the using agencies the situation with respect to tire chains, it being represented that the various manufacturers have a limited stock of wire rods on hand available for the manufacture of tire chains but that defense orders are being received in increasing volume that will shortly result in a curtailment of manufacture and ability to deliver.

In view of the representations made and because of the difficulties at present in obtaining delivery of supplies, it is suggested that orders for tire chains be placed as promptly as practicable--though purchases should be made only of quantities actually needed during the coming winter months. The Procurement Division contracts numbered Tps. 41203 and Tps. 41191, Items numbered 8-C-1000, 8-C-4300 and 8-C-4320, cover the furnishing of tire chains.

ADMINISTRATIVE NOTES

Supply Orders — When you are remembering not to forget that copies of orders for supplies and services obtained by field workers direct--that is, not through our Business Office--should be sent in as promptly as practicable after the end of each month so that we can have them in ample time to make up our report by the 7th of each month, impress upon your mind that first means just that--not the 11th or 21st!

It was the intention in establishing the field order procedure with its printed forms, that these forms would serve as an authorization and a record of purchases. They have been in use elsewhere for some years but so many of our workers operate under letters of authorization that we did not consider it necessary until a few years ago to require the use of these order forms. The General Accounting Office, however, decided that the forms should be used generally.

When it is necessary to place an order, where you would ordinarily write a letter or attend to the matter through conversation, it will now be necessary to prepare an order form, showing name and address of dealer, name and address of person to whom supplies and services are to be furnished, and the cost--as close an estimate as practicable, where actual cost will not be known until delivery is made. Where the material is to be shipped some distance, a Government Bill of Lading should be furnished with the order.

On the back of the order form will be found general instructions for its preparation by the dealer. There is a space at the bottom of the form to be signed by the employee placing the order. Orders should be numbered consecutively, for ease in reference. At some stations where a good many orders are issued each year, a new series is started at the beginning of the Fiscal Year, with year indicated--for example, 11-42, meaning order No. 11, Fiscal Year 1942, etc.

Where a car is to be repaired, etc. it should be taken to the shop and an estimate obtained of probable cost of work, after which the order is prepared, and sent to the auto shop. Sometimes, of course, the actual cost will exceed the estimate, unforeseen additional work having been found necessary. The actual cost of the job should be entered on the file copy to ensure accurate record. The blue copy sent to the Business Office should show in every case the actual cost and date of completion or delivery, if order has been completed when the blue copy is sent us; if not completed, insert on this blue copy a careful estimate of cost. When purchase is made on a contract (say lubricating oil on Navy Department Contract, or supplies on Procurement Division contracts) the number of the contract involved should be entered on the blue copy.

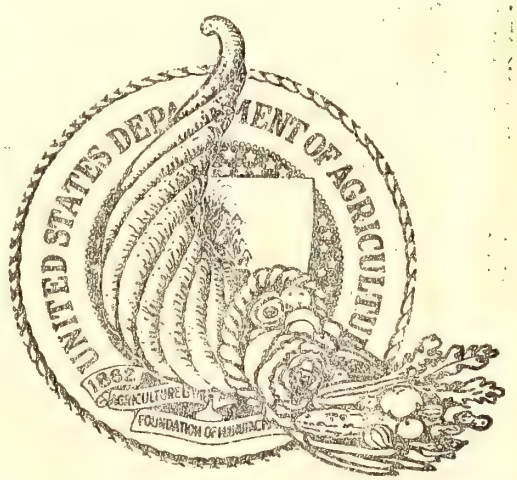
Apparently service station deliveries of gas and oil, grease jobs, etc. as well as small purchases made for cash and included in expense account vouchers need not be covered on these blue forms; nor utility services such as electricity, water, gas, garage rent, laundry, etc. We'll know more about that later for, believe us, "we're in the Army now!"

Vol. 13 No. 18 September 15, 1941

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division, through which the staff at widely separated locations is kept informed of the progress of technical and scientific investigations at Beltsville and at various field stations. The News Letter also carries administrative orders and memoranda with necessary explanations and directions. Since the material used is often of an informal and confidential nature it should not be published without the approval of the Division. Often reports of field workers and others represent their personal opinions, and so are not necessarily the official and final word on the matters they discuss.

John A. Ferrall, Editor

Vol. XIII U. S. Horticultural Station, Beltsville, Md. No.19
October 1, 1941

Pineapples Dr. William A. Cooper of the section of subtropical fruit investigations, writes from the Horticultural Field Station at Orlando, Fla. concerning an interesting development in connection with pineapple growing in Florida.

"The pineapple is one of the most interesting of the subtropical fruits now grown on a commercial scale in Florida," he points out. "This plant is a herbaceous perennial belonging to the genus Ananas of the family Bromeliaceae. Included in this family are many air plants. The best known of these is the Spanish moss (Tellandsia usneides) that is indigenous throughout the Southeast.

"The earliest recorded successful planting of pineapples in Florida was made in 1860 at Key West. By 1890 the industry had become centralized in the famous East Coast pineapple belt, extending from the vicinity of Fort Piece southward to Miami. The industry prospered and by 1910 there were more than 5,000 acres of pineapples in this section. This industry, however, was almost completely eliminated during the next 10 years and by 1930 there were only a few hundred acres of bearing pineapples in Florida. Many reasons have been advanced to explain this decline of the industry, including inferior fertilizers, depletion of soil humus and the prevalence of wilt. One of the chief reasons, however, was the extension of the Florida East Coast railroad to Key West. Low freight rates were made available to the cheaper Cuban crop that was marketed during the same brief harvesting season as the Florida crop--June 15 to July 15.

"At present there are only about 75 acres of pineapples grown in Florida and about 50 acres of this is located in one large planting at the Flatwood's Plantation, Boynton, Fla. Even with this small acreage it has not

SUBTROPICAL FRUIT INVESTIGATIONS

W. C. Cooper (continued)

been possible to market the fruit at a profit, due to Cuban and Puerto Rico competition. The logical way out of this difficulty would be to mature the main Florida crop at a different time than normal, and this is what has been accomplished by experiments conducted during the past three years.

"For many years some few pineapple growers in the Azores have used wood smoke to induce pineapples to flower prematurely. One of the constituents of wood smoke is ethylene gas and it was found by Rodrigues in 1932 that this gas does cause flowering of pineapple plants in Puerto Rico. This work, however, was done in the laboratory and no attempt was made to use ethylene on plants growing in the field under practical growers conditions.

"A practical method of treating pineapple plants in the field here in Florida with ethylene gas has been developed and was used successfully last year at the Flatwood Plantation. The method consists in covering the plants with muslin cloth and introducing to this covered area a continuous flow of minute amounts of ethylene gas for a period of from 12 to 24 hours.

"The muslin tent used at the Flatwood Plantation during the past year covered one fourth of an acre, or 3,000 plants. With this set-up, 25 acres were treated during the summer and fall, and off-season fruit was produced during the winter and spring months when there were no fresh pineapples on the market. This fruit was sold at a substantial profit and at the same time a nice market was established for that particular brand of fruit by supplying it at regular intervals.

"Usually from 90 to 100 percent of the plants treated are induced to bloom. Even small plants are caused to bloom, but such plants usually produce small fruit. Under normal conditions, slips planted in August develop into large mature plants by the following July, but they continue to grow vegetatively until late November when formation of new leaves stops and flower formation starts.

"If these plants are treated with ethylene in July, flower formation starts immediately and ripe fruit is harvested in January. Plants treated in August and September produce ripe fruit in March and April, respectively; while untreated plants do not produce ripe fruit before June 15. Thus, by treating plants at intervals in the summer and fall, it is possible to harvest ripe fruit throughout the winter and spring months."

VEGETABLE INVESTIGATIONS

On August 11-12 the annual Northeastern Vegetable Breeders Conference and Field Days were held at the U. S. Horticultural Station and at the Maryland Agricultural Experiment Station. Over 75 participants and visitors spent the first day going over the U. S. Horticultural Station, particularly the vegetable breeding plots, variety trials, greenhouses and various lines of research in which they were interested. Staff members were available for conference, discussion or demonstration of their work in detail, in the field, laboratory, or greenhouse after a short general tour of the station.

The evening of August 11, the groups enjoyed a Maryland chicken dinner at the historic (restored) old Rossborough Inn at the University of Maryland at College Park. Dr. B. L. Wade of the Regional Vegetable Breeding Laboratory at Charleston, S.C. was the principal speaker--on "The Value of a Coordinate Vegetable Breeding Program." August 12th was spent at the University of Maryland and Maryland Agricultural Experiment Station farms.

Among the visitors were most of the active vegetable breeders in the eastern United States, from public agencies and private seed firms. There was also a number of extension workers, teachers, and commercial men with major interests in vegetables.

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"The one problem facing the apple growers this fall is the codling moth," he writes September 13th. "The outbreak came comparatively late in the season and growers throughout the district report that on August 1 they had excellent crop prospects and by the middle of the month their fruit was heavily infested. In our experimental plots the codling moth infestation is more severe at the south end of the experiment where the trees were given the standard lime sulphur-bordeaux-arsenate of lead mixture. There is a considerable reduction in number of worms on the phenothiazine plot but this season this material had a deleterious effect upon the finish and size of the apples. There is slightly less wormy fruit in the plots where substitutes for lime sulphur were used in combination with arsenate of lead. This may be due to variations in the distribution of the codling moth through the orchard. A similar effect was noted last season."

Elmer Snyder, Fresno, Calif.

"During the past several weeks fruit weight records have been obtained in the main test blocks," he writes September 13th. "The grape varieties harvested so far, in order of their ripening, are Panariti, Ribier, Black Monukka, Sultanina, Muscat of Alexandria, and Maraville de Malaga. About 36,000 pounds of grapes have been harvested by WPA pickers and turned over to the Commodity division. Weight records have been obtained on one-vine units, that is, on each vine separately in these test blocks..."

DECIDUOUS FRUIT INVESTIGATIONS

C. P. Harley, Wenatchee, Wash.

"The 1941 growing season so far has been unique in many respects," he writes September 5th.

"The unseasonable cold weather experienced in August has assisted greatly in the control of codling moth and two-spot mite. The apple crop so far is perhaps the cleanest that we have had here in several years. Of course, the coordinated spray program and field supervision of R.A.C.C. have also done much to keep down codling moth infestation. Since early in August the evaporating power of the air has been low as compared with other seasons. We are not taking records of the evaporating power this summer, and do not know the exact amount. However, with the rainfall that we have experienced during the past month it would be certain to be very low.

"It is interesting to observe that cork-spot of Anjou pears is very slight. Last year the loss due to this trouble was enormous. Again the incidence of cork-spot is correlated with the evaporating power of the air. Last year this was extremely high. During the past 10 days we had a rainfall of 1.50 inches. This is certainly an unusual situation in this country for this time of the year. However, it has provided ideal growing conditions for fruit, clearing the air and bringing about favorable atmosphere for fruit color. In spite of the fact that our season is approximately 19 days ahead of normal, it appears that, contrary to experiences of other similar years, we will probably have a good crop of high quality apples.

"All in all, the conditions in general have been favorable for the fruit growers in this region, both from the standpoint of growth and financial returns. Cherry growers experienced a very successful season, with prices well above the average. The return to apricot growers at the beginning of the harvest was $25.00 a ton. This rose steadily during the season, until the latter part brought $50.00 a ton. Some of the later shipments from Wenatchee Heights brought over $100.00 a ton to the growers.

"Peaches started in at $38.50 per ton and at present are selling for $50.00. Bartlett pears ranged from $40.00 to $50.00 a ton, with an average of $42.50. Anjou pear prospects are probably around the same figure. Growers are very optimistic for the apple deal also. Jonathans harvested to date brought $1.75 and early Delicious are quoted at $2.00 a box. The economic conditions throughout the country are probably responsible for some of these high returns. However, the stabilizing influence and activity of the R. A. C. C. and Land Use program have been potent factors in bringing about the present prosperity."

BRATLEY HEADS USDA CLUB

Dr. C. O. Bratley, who is in charge of the New York City laboratory of the Section of Handling, Transportation, Storage and Market Disease Investigations, has just been elected President of the New York USDA Club. Congratulations!

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"Last week, while topworking some of our selection in an orchard near Thomaston for testing, I had an opportunity to talk with several peach growers in that section," he writes September 2d. "They unanimously claimed to be the 'bluest' group of growers in Georgia, having just experienced their third successive disastrous peach season. In 1939 and 1940 they were frosted out, and this year they had a big crop of peaches but could not dispose of them at a profit. One prominent Thomaston grower said he would get out of the peach business in 15 minutes if someone would pay his losses, but his only chance of breaking even was to stay with peaches. Growers are predicting that the quality of next year's crop of peaches will likely be affected because of the difficulty in obtaining credit to fertilize orchards properly this winter, and to spray and thin the fruit.

"Another grower, located about 12 miles east of Thomaston, while admitting that he did not quite make production costs on his peach crop this years, is relatively satisfied with his results in comparison with what happened to other growers!"

H. F. Bergman, East Wareham, Mass.

"As the cranberry harvest continues, many growers are reporting the yield of Early Blacks to be greater than estimated," he writes from the Cranberry and Blueberry Field Station on September 17th. "From available reports the estimates are being exceeded by about 10 percent. The color of the berries has improved greatly since last week. Some growers have their Early Blacks all picked. The opening price on Early Blacks has been set at $11.40. Last year they opened at $11.60. Shipments are being made regularly with a moderately good market.

"Due to the small crop last year the supply of berries for the canneries is low. They would be able to handle all the Early Blacks produced in Massachusetts this year, so the growers can be sure of a ready disposal of this year's crop. There have been no hard frosts so far this fall although warnings were sent out two days during the week. The temperature did not go below 29°F. on either night, so that it was not necessary to flood the bogs.

"The regular summer meeting of the Cape Cod Cranberry Growers' Assn. was held September 2d at the State Bog. There were short addresses by Congress Gifford of this District, Dr. Sievers, director of the Experiment Station, and Mr. Parker of the extension department of the State College. Brief reports on experimental work in progress during the year were made by Drs. Franklin and Bergman. The 1941 crop estimate was given by a representative of the U.S. Crop Reporting Service. The Massachusetts crop was estimated at 340,000 barrels as against 330,000 last year."

DECIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz, Hood River, Oreg.

"The pear scab situation appears worse from the commercial standpoint than it has for several years," he reports September 8th. "The fungus apparently has spread to practically all sections of the valley for a few to many scabby pears may be found in almost any orchard this season. Two light rains fell during the early part of this month and the 'buckshot' scab spots from these have now appeared. Starting on August 25, we have had three days of rain. This has generally started late at night and continued until after noon of each day, and undoubtedly has caused a serious scab increase. The fruit will be harvested before these new infections have had a chance to appear in the field so we are anticipating its appearance after the fruit is placed in cold storage. We are afraid the growers are in for a real battle with this scab problem if we experience another wet season next spring. A part of our spray plots have received six sprays, but it is not difficult to find scab there. Of course, the remainder of the orchard received only a partial program and it is difficult to keep scab from blowing into our plots from that source. The check trees appear to be infected 100 percent...

"Specimens of Bartlett pears were received from Mr. Pentzer from Fresno, Calif. that showed a condition about intermediate between stony pit and boron deficiency symptoms. The surface pitting was quite similar to stony pit on Anjou, but necrotic spots were present in the cortex and core area. I am uncertain as to the cause of this trouble but have sent for budwood from this tree...

"Some of the spray work has already been reported. The method of putting young fruits in moist chambers to produce arsenic injury in the stem or calyx ends has been continued. A considerable number have now been run. All fruits known to have been unsprayed with lead arsenate have failed to show any stem or calyx injury after two months in moist chambers. Sprayed fruit has given variable results, but in all cases some injury has occurred. Unfortunately, Mr. Childs' spray plots all received lead arsenate as a calyx spray, with other materials following after this period. However, certain trends are indicated that may yield a clue on how to prevent this injury and certain plots may be laid out for next season with this in mind. Lead arsenate alone has appeared safer than when mixed with casein or lime. It is just barely possible that one of the substitute materials such as Kryocide might be used as a calyx spray to eliminate calyx injury, to be followed later with lead arsenate. The problem of calyx and stem injury with the resultant canker rot is so important locally that any effort to eliminate this trouble will be time well spent. We hope something practical can be worked out from this somewhat theoretical method."

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"The cranberry harvest is in full swing, with labor hard to get on many bogs," he reports September 8th. "High prices paid for harvesting other crops, particularly tomatoes, have drawn many men from the bogs. At least one grower has a gang of women scooping berries with the regular N. J. scoop, which I had never seen done before. There has been no frost as yet, although the temperature has fallen to 32°F. twice on the bogs."

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

C. E. Steinbauer (vegetable production investigations)

"At Gibsland, La. I stopped to examine a new 50,000-bushel commercial sweetpotato storage house," he writes concerning a trip late in August. "Porto Rico sweetpotatoes were being dug and hand cleaned and packed in James crates for shipment to northern markets. Farmers were getting 70 cents per bushel at the house and these potatoes were selling at around $1.50 at northern destinations. The North Louisiana sweetpotato crop is almost entirely Porto Ricos. The sweetpotato starch plant at St. Francisville, La. Has turned its attention this season entirely to dehydration of sweetpotatoes for stock feed. To a large extent the plant will utilize cull roots from plantings made primarily for market use."

N. H. Loomis (small fruit investigations)

"The entire week ending August 23d was devoted to the harvesting of bunch grapes. Yields have been much heavier than in 1940. In the rootstock planting the yields on Dog Ridge stock were in general much greater than on other stocks. Stocks such as Aramon x rupestris Ganzin No. 2, Riparia x rupestris No. 101-14, and Solonis x Othello No. 1613, which showed considerable promise in past years, have declined rapidly."

NUT INVESTIGATIONS

Harold M. Sell, Gainesville, Fla. (Tung investigations)

"During the past two weeks Mr. Hamilton and Mr. Fisher have completed budding approximately 5,000 trees in the Wershaw nursery for the proposed 'study,'" he writes August 30th. "A considerable number of trees have developed the earlier symptoms associated with zinc deficiency. This element has been applied to the soil but as yet it is questionable if it has benefitted the plants. The nursery owners intend to apply a zinc-manganese spray but this has not yet been done due to some mechanical difficulties with the equipment. Mr. Dickey also pointed out the presence of a large amount of nematode injury, but in spite of this the nursery is generally conceded to be one of the best of the various tung orchards..."

NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"The forepart of the week ending August 30 was spent largely in a study of the factors associated with the occurrence of spray injury of walnuts. In company with Dr. R. H. Robinson, chemist of the Oregon Agricultural Experiment Station, a tour was made of a number of sprayed walnut orchards which this year show varying degrees of spray damage. The type of spray injury occurring in a number of walnut orchards this season is an interveinal spot necrosis. There is but very little, if any, marginal injury which is the typical form of bordeaux injury on walnuts. After a survey of the orchards in question, Dr. Robinson was of the opinion that the abnormally heavy rainfall and unprecedented high temperatures which occurred during the current season were largely responsible for the typical type of spray injury prevalent this year in many sprayed walnut orchards. However, certain other factors in addition to environment appear to play a role in determining the severity of spray injury. Thus, vigor of the trees seemed to have a pronounced bearing on the incidence of spray injury as it was quite noticeable that the thriftiest trees growing on the better soil types were injured least. The neutral, 'insoluble' copper compounds, namely, copper oxalate, yellow cuprous oxide, and sodium copper polyphosphate caused noticeably less damage than bordeaux mixture."

John R. Cole, Albany, Ga.

"Late in August I accompanied Mr. Lewis to Monticello, Fla. and there we found that a considerable number of pecans of the Moore variety will be lost in the plots there, our estimate of the crop damage running from 25 to 50 percent. This is the first time that I have seen any commercial loss resulting from the scab disease on the Moore variety. There is also severe damage on the Teche and Moneymaker varieties resulting from the scab disease in the vicinity of Monticello, Fla. and Thomasville, Ga. In fact, the Stuart, Brooks and Curtis were the only varieties we found free of the scab disease. A few scab spots were noticed on the Farley variety where it was interplanted with the Moneymaker for the first time, so it may be that it will scab also."

F. N. Dodge, Shreveport (Robson), La.

"Moisture and nitrogen determinations were made on soil samples collected the middle of August. Soil nitrogen was low in all plots. Plots on which 8 pounds of nitrate of soda per five trees was applied five weeks previously were also low in nitrate nitrogen. Moisture is above the wilting point (August 23d) in the first foot of soil in the clean cultivation plots, but is at the wilting percentage in the cotton and velvet bean plots, and below the wilting percentage in the Bermuda sod plots. The last rain that thoroughly wet the soil occurred four weeks ago. Rains since then have been too light to be of much benefit..."

NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

"Schley nuts in most orchards have shells about one-half hardened and are still dropping to a small extent," he writes from the U. S. Pecan Field Station and Laboratory on August 23d. "The relatively uniform rainfall in recent weeks has reduced to a minimum this year the loss of nuts from splitting and most of the nut drop is due to shuckworm infestation or stink bug feeding punctures. Neither of these insects appears to be as abundant this year as in former years."

HANDLING, TRANSPORTATION, STORAGE, AND MARKET DISEASE INVESTIGATIONS

Edwin Smith, Wenatchee, Wash.

"The State of Washington has one of the finest apple crops that has been produced in 15 years," he reports September 13th. "The control of worms has been remarkable and the orchards that previously have had from 15 to 25 percent cullage through worm injury are now showing losses of only 2 or 3 percent even in the Jonathan crop. Cool weather during the month of August, associated with heavy dews and an abnormal amount of rain, resulted in early coloring. Since about August 23 we have had a succession of cloudy, or partially cloudy, days with frequent showers or heavy rains. Since that time there have been few days during which the skies were entirely clear. This has resulted in ideal conditions for color development. There were no days whatsoever that would cause 'buckskin." Jonathan apples were adequately colored at 145 days from full bloom and Delicious apples were colored well into the trees as maturity was acquired. The Jonathan harvest should have been in full swing since September 8, but unfortunately sales have not been made and the harvesting delayed, but this has not been due to poor color. At the present time some Delicious are so fully colored that common Delicious have taken on the appearance of Starking. Many packing houses got out the full tonnage that should have been packed. In the Omak-Okanogan district they anticipate starting full operation during the week of September 15.

"Up to the present time growers have been led to expect that they may receive high prices for their fruit, and morale has been very high. At the present moment exceptionally high prices have not been realized excepting on the first cars of red Delicious, a few of which sold at $2.50 f.o.b. Apparently sales could not be confirmed for Jonathans at $1.75 with the result that Yakima shippers have been selling at $1.50 for Extra Fancy and $1.35 for Fancy. At present the only depressing factor is the shortage of boxes. Growers did not place orders early and the mills have been working to capacity on defense orders. It is now feared that it will not be possible to secure sufficient box shook to pack the crop."

HANDLING, TRANSPORTATION, STORAGE, AND MARKET DISEASE INVESTIGATIONS

Edwin Smith, Wenatchee, Wash. (continued)

"Considerable stop-drop spray was used for Bartlett pears," he wrote August 30. "Horan Bros., have had breakdown in Bartlett pears from their sprayed trees and are convinced that the hormone spray was responsible for accelerated ripening. Our attention was not called to the disorder before the fruit was picked but a representative of the WSC Tree Fruit Branch Experiment Station carefully examined the orchard and stated that there was no evidence to show that the spray was responsible for the trouble other than that it caused the fruit to hang on the trees longer and become over-ripe before picking.

"From Entiat to the north all pears have been placed in warm refrigerator cars and fumigated for pear psylla with methyl bromide for two hours before storage. A significant part of the Bartlett pears in the Lake Chelan Fruit Growers' cold storage show abnormal ripening and watery breakdown usually starting at the core or at one side of the core. The disorder is similar to that observed in the Horan storage, where methyl bromide was not used, and Mr. Ryall states that it is similar to breakdown observed in California pears returned by Dr. Bratley from New York. Horan Bros. did not use methyl bromide. Only two growers in Chelan used a hormone spray. At Entiat where the pears were fumigated as at Chelan but where rapid cooling was accomplished there is practically no breakdown in evidence. The pears were usually held at high temperatures for fumigation at least six hours (sometimes longer). After going in the Chelan cold storage prompt cooling was not always accomplished. Our general conclusion is that advanced maturity and ripening at high temperatures were the principle causes of the disorder.

"The beginning of Anjou harvest was held up several days during this week by rains, which with cool temperatures and extended periods of cloudiness have prevailed during the past week. The color of Jonathan and Red Delicious is the best it has been at this season in years. Jonathan harvest will get under way immediately so that very good keeping quality is anticipated. Earliest orchards of Red Delicious no doubt will be picked during the first week of September, though in this general area 145 days from full bloom will fall on September 12. At Rock Island orchards were in full bloom a week earlier than at Wenatchee because of intervening cool weather in April.

"Weather conditions, sanitation methods and good spraying have resulted in one of the cleanest crops in at least five years. First cars of Red Delicious have been sold for $2.50 f.o.b., and $1.75 to $2.00 has been mentioned as a possible price for later shipments. Naturally, morale in the district is the highest it has been since 1931."

STOP-DROP SPRAYS ON PEARS IN NORTHWEST

In Better Fruit for August 1941, George Raichle writes of experimental tests he conducted in the Wenatchee-Okanogan district during the 1940 season on apples and pears. He found that the use of a hormone spray reduced the normal drop 86.6 percent on pears!

Four large D'Anjou pear trees in the East Wenatchee district were selected, in close proximity to each other, of uniform size, and bearing uniformly heavy crops. All were uniformly exposed to wind. The fruit was dropping badly at the time the test was started. Two of these trees were sprayed with 1 pint of naphthalene acetic acid per 100 gallons of water (making a concentration of .001 percent) and 1 pint of emulsified summer spray oil (50 deg. viscosity and 90 U.R.). The other two trees were left unsprayed as a check. All dropped fruit from the four trees was removed immediately after the spraying. From then on for 29 days dropped fruit was collected, and recorded. The percentage of drops from the sprayed trees was 9.1; from unsprayed, 54.6--a difference of 86.6 percent. The spray became effective within 24 hours from application. Mr. Raichle adds:

"Maturity progresses normally on fruit sprayed with naphthalene acetic acid hormone spray. It neither speeds up nor retards maturity, consequently fruit thus sprayed should be picked at regular time. The main benefit in the use of naphthalene acetic acid hormone spray is to keep the fruit on the trees until the proper degree of maturity..."

DR. COCHRAN JOINS THE DIVISION'S STAFF

Dr. Lloyd C. Cochran joins our staff as agent (plant pathologist) on October 1, 1941, with headquarters at the Citrus Experiment Station, Riverside, Calif. He is taking over the work formerly handled by Dr. Lee Hutchins in connection with investigations on virus diseases of fruit trees, with particular emphasis on peach mosaic, phony peach, and western diseases. In addition to directly conducting work on peach mosaic at Riverside, Calif., Dr. Cochran will supervise virus work at Fort Valley, Ga.; Brownwood, Tex.; Salt Lake City, Utah; and Wenatchee, Wash.

Dr. Cochran is already well known to those of our staff who have had occasion to visit the Pacific Coast, for he has been connected with the department of plant pathology of the University of California (Citrus Experiment Station, Riverside, Calif.) since 1936. He has been in charge of the investigations of the peach mosaic disease. Previously he served as assistant in plant pathology at the Michigan Agricultural Experiment Station. He received his B. S. A. degree in horticulture from Purdue University; and his M.S. and Ph. D. degrees from Michigan State College.

NATIONAL SAFETY CAMPAIGN

Below we are quoting the President's Proclamation of August 18th calling on the National Safety Council and all citizens to enlist in a campaign of accident prevention. The Division has a definite responsibility in this, as well as the individual employee, and we urge your whole hearted cooperation in the campaign.

"The Nation is confronted with a rapidly rising accident toll. At the present rate, the total number of deaths from accidents this year will exceed 100,000. Traffic accidents alone caused 34,500 deaths in 1940, and thus far in the present year there has been an increase of 17 percent in traffic fatalities.

"By taking a huge toll in life and property, accidents definitely hinder our national defense effort. To insure maximum efficiency we must have maximum safety 24 hours a day--not only at work, but also on the highway, at home, everywhere. The troubled times in which we live must not make us callous or indifferent to human suffering. These unusual times require unusual safety efforts.

"NOW, THEREFORE, I, FRANKLIN D. ROOSEVELT, President of the United States of America, do hereby call upon the officers and directors of the National Safety Council to mobilize its nation-wide resources in leading a concerted and intensified campaign against accidents, and do call upon every citizen, in public or private capacity, to enlist in this campaign and do his part in preventing wastage of human and material resources of the Nation through accidents..."

CITRUS WEEK!

A real "Citrus Week" occurred late in July, according to the California Citrograph for September 1941, when the California Fruit Growers Exchange had total sales of 1,045,534 boxes of oranges, lemons and grapefruit--this in a single week!

Often we do not consider the importance of such a business to labor and other industries, says the magazine. The tremendous contribution to the economic welfare by the citrus industry (using the 1940 cost and production figures of the California Citrus League) may be seen from the fact that this total of 1,045,534 boxes of fruit represents an expenditure for freight and refrigeration in moving the fruit to market of more than a million dollars; approximately $800,000.00 for labor, wages and materials in producing the fruit. Cultivating and irrigating labor, teams and tractors, add $160,000; pruning and tree care, $41,000; taxes, $79,000. For picking the fruit, $170,000; hauling to packing house, $39,000; packing, $534,000.

To which should be added the cost of such items as soap and detergents for washing the fruit; wax for polishing it; materials for preventing spoilage in transit; and wages of truckers, salesmen, etc.

BOSWELL MADE ASSISTANT HEAD OF DIVISION

Dr. Victor R. Boswell has been appointed Assistant Head of the Division. He serves as Acting Head of the Division during absences of Dr. Magness and will also help in administration of the Division as may be desired. Dr. Boswell will also continue in charge of the Vegetable Investigations Section.

PAN AMERICA, A NEW TOMATO

"Pan America, a new fine quality tomato with high resistance to fusarium wilt, is one of the latest achievements of plant breeders in the U. S. Department of Agriculture," says a press release, referring to one of our new introductions that is described in Circular No. 611, "The Pan America Tomato, A New Red Variety Highly Resistant to Fusarium Wilt," by William S. Porte and H. B. Walker of our Division.

"The new tomato was developed from a cross between Marglobe, the variety most widely grown in the United States, and a wild species known as the red currant tomato, collected in Peru. The wild parent is practically immune from fusarium wilt and has passed this character along to the hybrid Pan America. Fusarium wilt has been one of the most costly tomato diseases in the eastern and southern United States."

In addition to its remarkable resistance to wilt, the Pan America is highly productive. It usually reaches maturity a few days earlier than Marglobe, and appears suitable for canning, manufacturing of tomato products, or for marketing fresh. The Department has no seed for distribution, but dealers should be able to supply seed by next spring.

TRUE YAMS ARE NOT SWEETPOTATOES--AND VICE VERSA.

Apropos the News Letter editor's casual reference recently to the sweetpotato as a "yam", he is reminded by a reader that the true yam is really a quite different genus, a tropical food plant with starch-bearing roots. The name "yam" as sometime used in the South is probably a corruption of the African word "yama", first applied to the sweetpotato by Negro slaves who evidently mistook it for the "yama" or "yam" of their native country.

---------- ADMINISTRATIVE REMINDER ----------

Don't forget--Copies of orders for supplies, etc. purchased by field stations direct must be mailed as promptly as possible after the first of the month in order that our Business Office may be able to complete its report before the 7th of the month.

BETTER PASTE THIS OVER YOUR DESK!

GRADUATE SCHOOL

With the opening of its first 1941-42 semester September 22, the Department of Agriculture Graduate School celebrated its twentieth anniversary. Information concerning classes, etc. may be obtained at Room 1031 South Building, U. S. Department of Agriculture, Washington, D.C. (Telephone: Extension 5943). The school will continue its practice of beginning its afternoon classes at 5 p.m. Catalogues available from the School list the many courses now available.

"Without question the most elaborate and most successful in-service training institution..." says Dr. Leonard D. White, professor of public administration of the University of Chicago, and former member of the United States Civil Service Commission. "The high standards of instruction and the breadth of training afforded by the Graduate School of the U. S. Department of Agriculture mark it as one of the foremost training institutions of its kind in the world."

LUCIA McCULLOCH RETIRES

The Division lost one of its most popular workers when Miss Lucia McCulloch, associate pathologist in the section of floricultural and ornamental horticultural plant investigations, retired August 31, 1941. Woman workers in research fields owe her an outstanding debt for she was one of the first technical investigators to invade successfully a field formerly dominated by men! Her early work with the Department was in connection with pathological investigations, including the examination and diagnosis of diseased plants from all parts of the country, by microscopic study, isolation and cultural study of germs causing diseases. She soon won recognition as one of the outstanding cytological investigators in her field.

She had graduated from the Florida Agricultural College in 1902, with a B.S. degree in agriculture, majoring in biology. Her first work with us was as special agent. She was for a time at the subtropical laboratory in Miami, Fla. She was successively promoted to the positions of scientific assistant, assistant pathologist, and associate pathologist.

Of late years she has been connected with the floricultural and ornamental horticultural investigations of the Division. A capable bacteriologist, she has become widely recognized as an authority on diseases of gladiolus, and has contributed much fine work to the study of bacterial diseases of iris and other plants.

A mimeographed paper on "Diseases of Bearded Iris:" a Journal of Agricultural Research article on "Bacterial Leaf-Spot of the Begonia;" a paper in Phytopathology on "Leaf Blight of Iris Caused by Bacterium tardicrescens;" another Journal of Agricultural Research contribution on "A Bacterial Diseases of the Tung-Oil Tree;" and a recent Farmers' Bulletin on "Gladiolus Diseases and Insects," of which she is senior author, are comparatively recent publications of hers, suggesting the wide range of her investigations.

DR. CHARLES F. CLARK TO RETIRE

Dr. Charles F. Clark, horticulturist in the potato investigations section, plans to retire November 30, 1941, after completing 31 years in the Department. Dr. Clark received his B.S. degree from the University of Vermont in 1897; and his M.S.A. and Ph. D. degrees from Cornell, where he served as assistant in plant breeding before joining our staff in 1910. For a time he worked at Greeley, Colo. but because of his ability to plan and carry out scientific experiments in plant breeding and selection so effectively, he was assigned to Presque Isle, Me. where most of the potato breeding work was being done. He spent his winters in Washington, D. C. Probably many readers of the News Letter have never seen a potato seed ball? Most people without scientific training have little knowledge of the seeding of potatoes, as plantings in commercial areas are made with seed pieces. Dr. Clark used to bring the new seed developed in connection with his breeding work to Washington or Beltsville when the growing season ended at Presque Isle, so that many of us will miss the familiar sight of him working with the seed of the many crosses--washing, drying, saving for planting.

Dr. Clark has played a very active role in the production of disease-resistant varieties of potatoes--the Katahdin, Chippwa, Houma, Earlaine, and Sebago, all resistant to mild mosaic, and the Sebago to late blight. He also helped to develop the specific gravity method for selecting potatoes of high cooking quality. A prolific and entertaining writer, he has contributed hundreds of papers to the Department's series and to scientific journals. One of his last official acts was the completion of a manuscript on the classification of American potato varieties, a study that has occupied him for many years.

Every one who has been associated with Charlie Clark officially, or who has known him personally, knows him as a quiet, unassuming member of our scientific staff but who, nevertheless, leaves a most enviable record of accomplishments, scientific as well as practical. His friends join in the wish that he may have before him many happy and profitable years. He plans to make his home in Riverside, Calif.

STEADMAN MOVES TO CALIFORNIA

Speaking of planning homes in California: The Banning (California) Record for September 4, 1941, has an interesting article concerning our former associate, Royal C. Steadman, who retired some time back because of ill health. Steadman, who won international fame as a painter of horticultual subjects while with us, has finally decided to make his home at Banning, Calif. according to this report. He and his wife are already there and much pleased with their new home, while the climate is proving beneficial in connection with the bronchial ailment that has troubled him so much. The article, incidentally, recalls the time when Steadman painted the cross-section of an apple so realistically that mice (he was then in one of the older buildings used by the Division) gnawed the seeds from the drawing!

Vol. 13 No. 19 October 1, 1941

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division, through which the staff at widely separated locations is kept informed of the progress of technical and scientific investigations at Beltsville and at various field stations. The News Letter also carries administrative orders and memoranda with necessary explanations and directions. Since the material used is often of an informal and confidential nature it should not be published without the approval of the Division. Often reports of field workers and others represent their personal opinions, and so are not necessarily the official and final word on the matters they discuss.

John A. Ferrall, Editor

Vol. XIII U. S. Horticultural Station, Beltsville, Md. No.20
October 15, 1941

Control of Bacterial Canker of Tomatoes. "The only ways the net return to the grower can be increased at present prices are by decreasing the cost of producing each ton marketed, or by increasing the grade or quality of product to command the highest obtainable price," writes Dr. H. Loran Blood of our Division in the September 1941 issue of Farm and Home Science (Utah Agricultural Experiment Station, Logan, Utah), discussing methods for the control of bacterial canker of tomatoes. "Increased production and better fruit quality often may be obtained by reducing the losses caused by plant diseases that lower both yield and market value of the crop...

"Bacterial canker is caused by a bacterium Phytomonas michiganense EFS. (Bergey et al) that attacks the tissues of the leaves and stem and damages the plant so severely that little fruit is produced. The disease may be identified by a one-sided wilting of the leaves and a breakdown of the stem tissues leaving a yellowish mealy mass from which the pith may be easily separated. A yellowish milky ooze may be obtained by squeezing the petiole of detached slightly wilted leaves. The causal organism may be carried on or within the seed of fruits harvested from fields where the disease occurs. It may also live for one or two years in seedbed and field soils...

"The control of bacterial canker depends upon carefully following three essentials: (1) The use of clean seed; (2) the use of clean seedbed soil; and (3) the use of a clean field. Clean seed may be obtained from companies that endeavor to destroy all infected plants in the seed fields and extract their seed by fermenting the crushed fruit pulp for 96 hours

before extraction, or treating the seed immediately following extraction with 0.8 to 0.9 percent solution of acetic acid for 24 hours. Farmers or canners who have particularly desirable strains of tomato can save their own seed practically free from contamination with the canker by following the same extraction procedure.

"The fermentation procedure for seed extraction should be carefully done by making sure the fruit is thoroughly liquified before being set to ferment. This may be achieved by running the fruit through a tomato pulper or some type of tomato juicer and recombining all the juice, seeds, and pulp in a suitable container. Fermentation should be allowed to proceed for 96 hours at a temperature of not over 70°F. The fermenting juice should be thoroughly stirred daily to submerge the pomace that floats to the top.

"When the 0.8 percent acetic acid soak treatment is used, the seed should be confined in loose cheesecloth bags before it has dried, and thoroughly agitated as it is immersed to insure uniform wetting at the beginning of the treatment. When it becomes necessary to treat dried seed, a 0.6 percent solution should be used and the same procedure followed except that the agitation should be more thorough to insure complete and uniform coverage of the dried seed. All acid treatments should be conducted in a cool place at a temperature not in excess of 70°F. The seed should be dried immediately following the treatment. Both the fermentation extraction and the acid soak treatments will result in a slight reduction in the germination of the treated seed. This reduction, however, is not great if the temperatures are kept comparatively low.

"Seedbed sanitation is important in the production of vigorous tomato seedlings. It is especially important if bacterial canker is to be controlled in contaminated beds. When even a slight amount of the disease is known to have occurred, the seedbeds should be thoroughly cleaned by washing the frames and covers with a 2 percent solution of formaldehyde and the old soil replaced with virgin soil to a depth of at least 12 inches. If manure is used, care should be taken to make sure that it is free of tomato plant debris of any kind. Open field plant beds should not be located on the same soil more than one year. A rotation system should be adopted that will move the plant beds to new soil every year and avoid soil previously used until the fourth year...

"A field that has produced tomato plants infected with bacterial canker should not be used for tomatoes again until at least the third year following the production of the diseased crop. A four-year crop rotation is preferable because it will also tend to reduce the severity of Verticillium wilt which is caused by a fungus that lives for some time in the soil...Constant vigilance must be exercised in the selection and handling of seed stocks if fields are to be kept free of the disease."

VEGETABLE INVESTIGATIONS

C. E. Steinbauer, Meridian, Miss.

"On Friday Dr. Lutz and I visited the Starch Plant at Laurel, Miss. and discussed various sweetpotato production, storage and starch problems with Mr. Randolph, Dr. Gordon, and Mr. Crumpton, the cooperative Starch Plant manager," he writes from the U. S. Horticultural Station on September 23d.

"The cooperative starch plant is now operating at full capacity, about 3,500 bushels per day. The plant first started operating September 8th, but had to close down for a few days subsequently due to the failure of farmers to bring in sweetpotatoes at the allotted time. Many farmers were tempted to pick cotton at the current high prices rather than dig their sweetpotatoes. As a result, some growers may lose part of their potatoes by freezing near the end of the season if cold weather is encountered before the harvest season is completed. A short visit was also made to the Mayhaw Canning plant where crowder peas (cowpeas) and pimiento peppers were being canned."

He had written September 6th: "On Tuesday our first digging was made on the Height-of-Ridge, N-supply, and date of digging sweetpotato planting. Fair yields were obtained considering that this is the earliest digging. There appeared to be only slight effects of ridge heights on yields, but digging was a little easier with the medium and high than with the low ridges. The high nitrogen plots appear to have given somewhat better yields than the low nitrogen ones. Digging on the first tier of plots was done with a regular potato digger. An excessive amount of cutting resulted from use of this type of plow. On the other three tiers a large type middle buster was used and damage by cutting was materially reduced. Various curing and storage treatments were set up, starch samples taken, and color readings made on roots from each lot."

APPLE PRODUCTION ESTIMATE

"The Wenatchee, Wash. Traffic Association issued early in September the apple crop estimate for the 1941 season," writes C. P. Harley from the Fruit Production and Disease Laboratory at Wenatchee. "This estimate is an average of all of the various estimates made by different organizations. The estimate is 14,844 cars. This is on the basis of 756 boxes for a standard load. The load this year, however, will be heavier, containing 798 boxes, which will reduce the above estimate slightly.

"In the estimate it was interesting to note the following varieties have shown an increase over the 1939 crop: Winesap, Delicious, Rome Beauty, McIntosh and Golden Delicious. Jonathans show a decrease."

THE SQUASH UNBENDS!

"Certain American housewives, shopping for that old favorite, the summer squash, have failed to recognize it this season, we are told," says the Christian Science Monitor. "The reason is that the squash has undergone a bit of re-designing. Instead of displaying the gracefully curving neck which used to embellish the vegetable market trays, the 1941 model is straight, rather resembling an Indian club. One description is that it looks like a 'stretched-out egg,' but to anyone who has ever tried to stretch an egg that may be a bit disconcerting.

"As with so many projects today, the alteration turns out to have been a government job. One should not jump to the conclusion that it is the Federal Bureau of Investigation which has taken the crook out of the neck of the squash. The fact is it has been done by the Department of Agriculture--through years of patient breeding in order that growers may have a product easier to arrange in crates. There you have it, with all the political implications. The squash sticks its neck out and gets regimented in a shipping box. The superintendents of parks are warned not to let the Department of Agriculture get hold of any of their swans."

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Interesting as the above item is, it is somewhat depressing in that it forces upon the News Letter the realization that investigators outside the Division are doing things too--this straight-neck squash is not one of our jobs. The Connecticut Agricultural Experiment Station breeders produced it, says Dr. Boswell, which considerably flattens our own inclination to claim for the Division every important horticultural achievement. We still insist that we're pretty good, though our mail shows a difference of opinion on this. One correspondent, for example, addresses us as the "U.S. Hot" station--which falls in with our idea exactly. But another writer sends his communication to "The U. S. Horizontal Station," indicating that we are flat on our backs. This came as something of a shock to the "Principal Horizontalist" in charge. Still another correspondent harks back to the days of the silent Western movies, when W. S. (Bill) Hart was in his prime--and addresses a letter to Dr. J. S. Caldwell at the "W. S. Hart Station."

DO YOUR CHRISTMAS SHIPPING EARLY'.

Each year the Post Office Department finds it necessary to request the cooperation of all government departments in withholding from the mails during the period from December 10 to 26, all bulk mailings of pamphlets, books, forms and other printed matter, etc. Matter of this character seriously interferes with the expeditions handling of the holiday mails and on account of its weight often causes damage to Christmas parcels. Please arrange, then, to get in orders for supplies, printed matter, etc. promptly so that such material will not have to be mailed during this Christmas period.

NUT INVESTIGATIONS

B. G. Sitton, Shreveport, La.

The first part of the week of September 13 the pecan orchard of Mr. Charles G. Henry was inspected at Weldon, Ark. Mr. Sitton writes: "During the early life of this orchard it was cultivated by being intercropped with cotton and as long as such cultivation continued the orchard produced very satisfactorily. The trees eventually became so large that growing a crop was no longer profitable, and all cultivation was discontinued. Since the cultivation was discontinued the orchard has failed to produce satisfactorily. It seems quite evident that resuming cultivation and applying commercial fertilizer would be very effective in bringing the orchard back into production. There was a small amount of liver spot on a few of the lower leaves of the trees. No vein spot or downy spot was observed.

"Native trees in some of the river bottoms in Arkansas apparently have a very good crop of pecans but they are so badly infested with webworm that it is doubtful if the pecans will fill properly. Many of the trees were completely defoliated by this insect."

Clifton W. Van Horn, Yuma, Ariz.

"Here at the Station this week, I have been doing some labeling of pecan trees; painting the blocks, rows and trees on each trunk," he reports for the week ending September 20th. "I hope to have this completed before harvest begins in order to make harvest operations a little bit easier. I have found that using a wood rasp to smooth the bark a little bit and then making a rectangular white block, it is rather easier to use a special fountain pen brush to put on the letters...

"Our weather is continuing with cool nights and warm days with as much as 50° changes between day and night, which I am confident is helpful toward pecan shuck maturity. If this weather will continue, I look for much less of pre-harvest germination and other harvesting difficulties this fall."

He had written September 13th: "Filling of the Burketts has proceeded sufficiently now that one or two layers of fat have been deposited but at the present in practically every location tested there is no additional layer of jell or liquid which is somewhat alarming, although it may be these will continue to add in fat at a later date since they have about 30 days yet in which to mature. However, I am rather concerned for the most part that the Burketts have been damaged considerably by aphis. Humble, Halbert and Success varieties seem to be very well filled for this time of the year and give good indications of quality. It is too early to be very sure of quality in the Mahan."

GROWTH HORMONES

"A growth-promoting hormone, more powerful than any of the synthetic chemicals now in use for speeding root formation, inducing growth of seedless fruits and other recently discovered 'plant magics' has been found in pollen by Dr. John W. Mitchell and Miss Muriel Whitehead of the U. S. Horticultural Station, Beltsville, Md.," says a summary by Science Service of one of our recent press releases.

"They obtained their material by extracting ripening corn pollen in ether and then evaporating the ether. A fatty substance is left, which is mixed with lanolin in a ratio of 1 to 10. This paste or ointment is then spread on the plant part where growth-stimulating effects are desired. A ring of it around the stem of a seedling bean plant caused an elongation between 1.5 and 2.5 times greater than that obtained by treatment of comparison plants with any of the synthetic growth regulators. It is not unlikely that the pure substance itself, when it has finally been isolated, will have even more powerful effects, for the crude ether extract of pollen is very likely a mixture of several substances, not all of which have growth-stimulating properties.

"Chemical analyses of the ether extract will be actively pushed, for if the active principle can be isolated and its chemical structure determined, it may be possible to make it artificially, at much lower cost than by extracting it from pollen.

"The effectiveness of the newly discovered substance in making plant stems grow longer may be put to practical use by florists in getting longer-stemmed flowers or in producing longer-fibered stems in such textile plants as flax, hemp and ramie. Such large-scale uses will depend, of course, on working out large supplies of the chemical at low cost.

"Another use that has been discovered recently for growth hormones has been in producing seedless fruits from unpollinated flowers. A large range of plants, from holly berries to tomatoes, has been thus treated with good results. Spraying orchard trees with the hormones has had the effect of restraining flower buds from opening until danger from late frost is past, of inducing apple and other trees to hang on to their fruit instead of dropping much of it prematurely and of hastening the ripening of oranges.

"To obtain a supply of pollen for their researches, Dr. Mitchell and Miss Whitehead exploit bees bringing the yellow dust back to the hives. The bees are compelled to pass through a narrow, screen-lined trap, which scrapes off their loads of pollen and lets them drop into a collecting box."

NUT INVESTIGATIONS

George F. Potter, Bogalusa, La. (Tung investigations)

"The planting of winter cover crops is receiving a good bit of attention both from the members of our staff and owners and managers of the commercial plantations," he writes September 27th. "It is of interest to note that there is a considerable tendency on the part of owners of large orchards to seed the winter cover crop earlier than is ordinarily recommended. In bearing orchards, dropping of the fruit interferes with planting between October 1 and October 15. In some cases men who have large acreages started planting as early as the first week in September. In one instance hairy vetch has already attained a height of three or four inches and yesterday we saw Austrian field peas almost that tall. We are watching these plantings with a great deal of interest and we hope they will succeed. It is certain that if it proves feasible to seed these crops in September, there will be many more acres of cover crop planted in tung orchards than if we have to wait until October 1st.

"Interest in thread blight is still high. This week Mr. Hines has mapped a second orchard at Varnado with a view to initiating a new series of experiments on control. This year the individual tree will constitute the plot. Blocks will be made up of trees that are about uniform in the severity of the infection. Thus all the treatments will be tried on blocks of trees that are severely affected and on others that are only slightly affected. This will give us a very accurate comparison of treatment effects."

John R. Cole, Albany, Ga. (Pecans)

"On Monday Lewis and I were requested by Mr. A. G. Robinson, owner of the Bryan-Wright orchard at Thomasville, to drive down and inspect the breakage that is occurring on the Frotscher and Stuart varieties," he writes October 4th. "We found this orchard littered up with broken limbs that came from large trees, and I believe it is safe to say that at least one-third of the limbs, as well as the nut crop, were on the ground. The trees were badly crowded and had an enormous crop. There are about 40 acres in the orchard and Mr. Robinson had estimated a crop of about 75,000 pounds before this breakage occurred. The foliage was in perfect condition and the nuts were large and well filled and were only slightly damaged by the scab disease. We suggested to Mr. Robinson that he thin, or remove, one half of the trees this winter and paint the tree wounds to prevent injury to the trees from wood rot.

"The program that has been carried out in the past in this orchard is to plant beans in January and fertilize this crop with 1,000 pounds of a complete fertilizer per acre. After the beans are harvested in May the orchard is cultivated often enough to prevent weed growth from injuring the trees. The heavy application of fertilizer no doubt is responsible for the heavy crop of nuts that was set on the trees this year; however, there was practically no crop harvested from these trees last year."

NUT INVESTIGATIONS

John R. Cole, Albany, Ga. (continued)

"During most of the week ending September 20th, I inspected orchards where our spray program was carried on this year. On Wednesday, I drove to Cordele and in company with Mr. J. W. Cannon made an inspection of their 1,000-acre pecan orchard. The Schley variety predominates here and although the crop is not as heavy as it was last year, most of the trees have a sufficient quantity of nuts so that spraying was justified in order to control the scab disease. However, the black aphid infestation was unusually severe, and they had difficulty in controlling this insect even by using nicotine sulphate at the rate of 1 gallon to 2500 gallons of water. Because of the poor control that growers have obtained by using the 1 to 4,000 gallon spray that Mr. Moznette has recommended, he is planning to change this formula to a stronger solution during the next season. At that time his recommendations will no doubt be 1 to 2,000, such as we have been using here for the past several years.

"The recent tropical disturbance caused slight injury to pecan trees in this vicinity. Showers fell early in the week and considerable limb breakage occurred, especially where trees were heavily loaded with nuts; and in some orchards nuts were broken off, my estimate going as high as 5 percent on some trees, especially Schley..."

Max B. Hardy, Albany, Ga.

"We had the pleasure of a visit with Dr. Magness on Monday and Tuesday," he writes September 20th from the U. S. Pecan Field Station. "Several experimental plots were visited during these days and the progress of the work discussed. On Tuesday, Dr. Magness was driven from Albany to Fort Valley and at the latter place visits were made to two orchards, one of which Mr. Cole is using in his scab control experiments.

"The remainder of the week was spent largely in attending to the chestnut harvest at Philema, which was at its peak. Another week should see most of the nuts off the trees. More than 800 pounds have been obtained to date. About 30 trees in the young orchard in the Brown tract have yielded from two or three nuts to more than five pounds, and some of these nuts are of relatively immense size with one lot of 72 nuts weighing two pounds. With more age on the trees and larger crops this large nut size is expected to be somewhat reduced.

"Some nuts of the Moore variety were observed this week with shucks splitting. Observations made indicate that filling will be fair to good in Schley and Moore, but not better than fair in Stuart. This is especially true at Philema where the Stuart trees have the heaviest crop of nuts in their history. Nut size will be very variable, depending on the rainfall distribution experienced this year in different localities."

OLD CROPS COMING HOME

Modern civilization is indebted to the Americas for many products now essential, of which the Old World knew nothing before Columbus discovered the New World, says an article in "Agriculture in the Americas," monthly Department of Agriculture publication. As outstanding American natives the author, E. R. Burkland, includes corn, grown from Canada to Patagonia; sweet and white potatoes; cocoa, used by the Aztecs as a food and as a medium of exchange; the peanut, found in ancient graves in Peru; rubber, particularly from the cultivated Hevea tree; the tomato; the pecan; the drugs, quinine and cocaine; vanilla; and numerous products less widely known, such as quebracho extract for tanning; the fibers, kapok, henequen and sisal; manioc root, the source of tapioca starch; and important rotenone-bearing plants used in insect poisons.

"Today, many of these American natives are grown more widely outside than in the Americas," says Burkland. "The potato is of outstanding importance in northern Europe, and maize is a staple food in Italy, Sapin and southeastern Europe. The sweetpotato was distributed across the Pacific and is well-nigh universal in tropical and sub-tropical countries. British India, China and Africa are the chief peanut-producing areas. Many of these crops of American origin are now produced in the Western Hemisphere either not at all or in such small quantities that consuming countries depend on sources outside the Western Hemisphere, where American natives thrive in foster homes. An important phase of the hemispheric agricultural program is to re-establish on their native soil products the Americas gave to the world."

U. S. TUNG MILLS EFFICIENT

Producers of tung oil in the Gulf Coast area of the United States have one important advantage over producers in China where the industry originated, points out a recent Department press release. American mills are equipped with highly efficient machinery for expressing the oil from the tung nuts and Department chemists are working on methods of extracting the oil with solvents that promise to get an even higher percentage of oil than is possible with the best pressing. A recent article in Foreign Crops and Markets (Office of Foreign Agricultural Relations) says that most of the Chinese tung oil is extracted by primitive methods. After grinding the nuts, the common practice is to put the meal in a hollowed-out log. Then the oil is squeezed out by applying pressure with wedges on a movable partition. A second pressing is usual, producing a low-grade oil that is usually added to the first extraction.

THE "PEACHAPPLE."

Dr. J. S. Caldwell tells us of an item in Food Industries (September 1941, p. 36) describing the "peachapple," a new fruit accidently developed by a dentist in Augusta, Ga. It is said to have the flesh of the peach and the skin of the apple-"the flesh you like so much, with the skin you love to touch." "Should this new fruit be classified as a periclinal chimera, a gene mutation, or an amalgam?" he inquires.

PRUNINGS

Vitamin B_1. Science News Letter (June 7) says that vitamin B_1 is conveniently supplied to plants by sticks of green wood, impregnated with the vitamin. These are thrust into the soil close to the roots. Every time the plant is watered, the vitamin is released.

Fertilizers. The poor showing of fertilizers on many Ohio soils has been traced to insufficient air in the soil, says Byron T. Shaw of the State station (American Fertilizer, July 5, 1941). The reduced air capacity has been brought about by too frequent cropping to clean-cultivated crops and too little return of organic matter to the soil. Recent experiments by the station show that it is possible to increase the air capacity of soils by growing legume-grass mixture in the rotation, by returning plant residues to the soil, and by using liberal applications of manure.

Sweetpotatoes. Discussing electric heating systems for sweetpotato storage houses, G. H. Dunkelberg, of the South Carolina Experiment Station, in Agricultural Engineering for June (quoted in Daily Digest) says electric heaters maintain curing and storing temperatures uniformly throughout the storage house and aid greatly in the curing process. "Curing of sweetpotatoes is greatly facilitated by the maintenance of temperatures from 80° to 85°F. and relative humidities of 80 to 85 percent. For long storage, temperatures of 50° to 55°F. and relative humidities between 80 and 85 percent are recognized as best. Generally speaking, stoves fail to maintain desirable curing and storing temperatures uniformly through the storage house. Fluctuations in temperature and humidity promote shrinking and rotting of the roots."

Peaches. "Ingenius is the fuel business developed by a California man who makes a round of canning plants, collects discarded peach stones, dries them in the sun, then resells them for fireplace fuel," says the Shirley (Indiana) News (Sept.5). "Scientists believe that some day important industrial products will be found in peach stones. In Colonial days, peaches were used for cider and brandy and were preserved by drying. Forsythe's famous fruit book of 1803 reports that peaches ripened from July to November and the great surplus was "applied as food to hogs." (Quoted in Department's Daily Digest)

DON'T FORGET that copies of orders for supplies, etc. purchased by field stations direct must be mailed promptly after the end of the month so that the Business Office may prepare its combined report by the 7th of each month.

ADMINISTRATIVE NOTES

Clearance of Group Consultations. "In the ordinary course of a year's business proposals are made from time to time that groups of cooperating State or local officials or groups of citizens representing organized interests of various sorts be invited by the Secretary to consult with the Department," says Memorandum No. 896, from the Office of the Secretary. "Obviously, these proposals should be considered from a Department-wide viewpoint. Obviously, also, nearly all of the proposals involve the informational functioning of the Department.

"I am asking the Director of Information to take the responsibility for examining all such proposals from a Department-wide standpoint and reporting to me the factual and policy considerations that should be taken into account in deciding whether groups should be invited to consult with the Department.

"Chiefs of bureaus and offices who wish to propose such consultative meetings will henceforth please route the proposals through the Office of the Director of Information." (These must clear through Dr Magner's office)

Loan of vehicles During the Christmas Season No, it's not too soon--and it may remind you to do your Christmas shopping early! Anyway, Circular No. 25 from the Office of Plant and Operations, dated September 9, quotes the following from a letter received from the Fourth Assistant Postmaster General:

> "It will be appreciated if you will have the necessary instructions issued to your representatives having custody over vehicles suitable and available for postal purposes during the coming Christmas season, in order that they may be in possession of the necessary authority to act when contacted by postmasters.
>
> "The Department will be grateful for every possible assistance you may be able to render in placing at the disposal of the postal service as many vehicles as possible for this special purpose. Owing to present conditions, it is anticipated that the demand for vehicles in the postal service this year will be greater than ever before, hence the urgent appeal for your assistance to the fullest extent."

This request, of course, is on the same basis as in previous years--that is, vehicles that are needed for the work of the Division should not be turned over to the Post Office agencies; neither should vehicles in dead storage be loaned. The Business Office should be advised of any arrangements contemplated or proposed along this line.

ADMINISTRATIVE NOTES

Army and Navy Communication Facilities

"The number of messages handled over the Army and Navy communication facilities for the National Defense agencies, which receive priority over the messages of other government activities, has reached such proportions that it is deemed inadvisable to use these facilities where it is imperative that a message be delivered on the same day it is dispatched," says Plant and Operations Memorandum No. 20 of September 19, 1941.

"In view of the fact that many of our messages are being delayed, it is recommended that the facilities of the Western Union Telegraph Company, Postal Telegraph-Cable Company, Radio Corporation of America, and the Mackay Radio and Telegraph Company be used in preference to the Army and Navy circuits on these 'same day messages.'

"If the volume of business of the Army and Navy radio services decreases to any extent we will advise your office of the fact and will recommend the resumption of the sending of messages through these government facilities."

It is suggested that wherever any field offices are now using the Army and Navy services they contact the local branches of those services and determine the extent to which they may make use of them without hindrance to the Defense Program.

American Phytopathological Society

In connection with the Science meetings scheduled for Dallas, Tex. Monday, December 29, 1941 to Thursday, January 1, 1942. the attention of those intending to contribute papers to the program of the Phytopathological Society is called to the following paragraph in the notice regarding papers to be presented before that society:

> "Date Abstracts Are Due: Abstracts must be received by the Secretary on or before November 1st. In accordance with a rule adopted by the Society at the Philadelphia meeting, 'The Secretary shall return to authors all abstracts received after the closing date.' (November 1, 1941.) Members are requested not to submit abstracts unless they expect to attend the meetings.

The Secretary is Mr. R. S. Kirby, Pennsylvania State College, State College, Pa. Incidentally, members are limited to two papers for this society's program--on which they may appear as sole, senior or junior author.

OUTSIDE WORK

Attention is invited to paragraph 1548 of the Department Regulations providing that no employee of the Department shall perform or be engaged in any work on his own behalf or for private individuals, firms, companies, organizations, or institutions--

1. If the outside work will prevent the employee from rendering full time service to the Department; 2, if the efficiency of the employee may be impaired by the performance of the outside duties, that is, where the outside duties are of such an onerous or fatiguing nature as to injure his health or to prevent him from doing his best work during official hours; 3, if the work to be done in a private capacity may be construed by the public to be the official acts of the Department, except that employees of the Department may permit the use of their names and titles as by-lines on articles which they prepare for publication by farm magazines and other periodicals, provided that the articles have been prepared and approved in accordance with the provisions of other Department Regulations; 4, if the business connections to be established or property interests to be acquired may result in a conflict between the private interest of the employee and his official duty or tend to bias his judgment; 5, if the doing of such work may involve the use of information secured as the result of employment in the Department to the detriment of the public service; 6, if such employment may tend to bring criticism on the Department or cause embarrassment; 7, if the work relates to a written discussion of policies or official work of the Department except as authorized by the Regulations; 8, if the work involves teaching, except as permitted by the Provisions of Personnel Circular No. 80 and any supplement thereto which have been or may be issued from time to time; 9, if the work involves participating in the establishment of any general farm organization; acting as organizer for any such general farm organization, or holding any other office therein; acting as financial or business agent for any general farm organization; or participating in any way in any membership campaign or other activity designed to recruit members for any such organization. (This provision shall be construed in accordance with Secretary's Memorandum No. 893.); 10, if the work involves the acceptance by the employee of office in, or the granting of permission to use his name in the advertising matter of, organizations commercializing the results of research work conducted by the Department, irrespective of any merits which such enterprises may appear to possess.

ACTION ON COMPLAINTS ABOUT INDEBTEDNESS

The Department does not permit itself to be used as a collection agency for debts owed by its employees, but it will not consider as a fit employee anyone who without adequate reason fails to pay just debts contracted by him. When a debt complaint is received by the Department, it is referred for acknowledgement to the bureau in which the employee concerned is located, and a written statement obtained as to the reasons for failure to make payment. If the claim is a just one, the employee will be urged to make satisfactory settlement. Creditors or collectors will be denied access to the employee for presenting bills or collecting debts while he is on official duty. (Reg. 1546)

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R.

The official organ of the Division, through which the staff at widely separated locations is kept informed of the progress of technical and scientific investigations at Beltsville and at various field stations. The News Letter also carries administrative orders and memoranda with necessary explanations and directions. Since the material used is often of an informal and confidential nature it should not be published without the approval of the Division. Often reports of field workers and others represent their personal opinions, and so are not necessarily the official and final word on the matters they discuss.

John A. Ferrall, Editor

Vol. XIII U. S. Horticultural Station, Beltsville, Md. No. 21
November 1, 1941

Dr. B. G. Sitton making history. Our colleague from the pecan laboratory at Shreveport, La., Dr. B. G. Sitton, has been making history recently, even though he had to step over into Oklahoma to do it. Yes, precedents fell recently when a moving picture projection machine was used in a Federal court at Oklahoma City to present evidence in a mail fraud trial. The pictures shown were taken by Dr. Sitton. Some were taken at the Shreveport station and others at the tract the defendants in the trial are offering to investors. Edgar S. Vought, Federal judge, said it was the first time movies had ever been shown as evidence in the Federal court there.

Shown first were even rows of trees with heavy foliage, with close-ups showing pecans on the trees. These pictures had been taken by Dr. Sitton in our own orchard. Next shown were pictures he had taken in the defendant's grove. Some of these showed trees described by Dr. Sitton as "fairly good," while the remaining pictures of the defendant's tract showed sparse sections. Dr. Sitton explained that from 150 to 200 acres of the promoter's grove contained the "better" trees, while 800 acres were scrubby. Altogether, 1,060 of the tract's 1,206 acres are planted to pecans. "Personally," said Dr. Sitton, testifying, "I would not take the orchard as a gift. It would be cheaper to buy good soil and start all over again." Investors had testified that the promotor had assured them profits of $1,200 to $1,500 an acre!

Our congratulations to Dr. Sitton on this splendid bit of public service. It serves to emphasize the fact that along with our research activities we do considerable work and issue quite a few publications, usually in mimeographed emergency form, to protect growers and investors against fraudulent schemes, inferior varieties, the planting of crops in unsuitable locations, and the like.

NUT INVESTIGATIONS

Milo N. Wood, Sacramento, Calif.

"During September I did a considerable amount of field work that had been waiting for me for some time, covering the territory from Lake County to San Diego county, and paying special attention to the territory south of Tehachapi. In general I found that much of Southern California is being thickly settled so fast that walnut and tropical fruit areas are disappearing in the face of advancing subdivisions. It appears to me that the land occupied by much of the nut growing area in southern California can no longer come within even high priced agricultural valuation, but must be sold for residence and business purposes. This, of course, means that actually the walnut area is on the decrease in the south and is being replaced by plantings farther north. It is quite clear that the nut industry has been expanding rapidly in 'so-called' northern California ...

"In nearly all districts there has been serious damage to almond trees by too much moisture last spring. In a previous report it was mentioned that possibly some of the trees that were apparently coming back still looked sickly and there were some doubts as to whether or not they would pull through. Many of these, especially the older trees, made a spurt toward revival but evidently got worse and finally were so bad that they were removed. This damage is clearly very serious in some almond growing districts and will reduce the tonnage in future years to a considerable extent especially in some of the older orchards. While almonds have been planted quite extensively it seems to me that when the new acreage comes into bearing it will just about replace the trees that have died. Owing to this I do not look for any great increases in production of almonds for a number of years to come.

Paul W. Miller, Corvallis, Oreg.

"Most of the week ending September 22 was spent in the field taking results of studies on the relation of spraying filberts for the control of bud and twig blight to the yield. The harvesting of the crop was completed from a representative number of trees in sprayed and untreated plots in a number of widely scattered filbert orchards in western Oregon. In all orchards except those where late spring frosts interfered with production, a significant increase in the yield followed timely spraying with bordeaux mixture for the control of bud and twig blight due to P. corylina. Thus, in tests carried on in one 10-year-old orchard near Eugene, Oreg. the sprayed trees yielded, on the average, 42.3 pounds of nuts, field weight, per tree, as compared with 36 pounds per untreated tree ... In a previous report reference was made to tests of the efficacy of naphthalene acetic acid as a preventative for premature dropping of walnut leaves. Little, if any, difference in the number of fallen leaves in treated and non-treated plots is evident. Notwithstanding, another application of this plant hormone has been made, as the effect, if any, of the previous treatment had undoubtedly worn off."

NUT INVESTIGATIONS

C. L. Smith, Brownwood, Tex.

"Some experimental data were organized during the first part of September. Loustalot's data on photosynthesis and transpiration of pecan leaves sprayed with bordeaux mixture show no effects due to the spray. He is now conducting experiments with lead arsenate sprays. Romberg is developing a method of rooting pecan cuttings by grafting them to seedlings at the beginning. These seedlings serve the purpose of nurse roots, and probably should be girdled after the cutting has started growth. Small wires tied around the seedlings failed to produce sufficient girdling, but despite this fact 33 percent of the cuttings rooted. None of the cuttings in this lot were treated with root-stimulating chemicals. This method seems to offer promise as a means of producing own-rooted pecan trees."

TOOTHPICKS--AND LITERARY AWARDS!

The mention in the above report of our associates Dr. C. L. Smith and Mr. L. D. Romberg, reminds us: Do you happen to recall that in the April 15, 1941 issue of the News Letter we commented on the interest aroused in certain activities of these men, who down in Texas then were using toothpicks in transplanting pecan trees?

We cautioned you at the time against falling into the error of believing that these boys were actually lifting out the pecan trees with toothpicks. What they were doing, of course, was to soak the toothpicks in a solution of one of the so-called growth-promoting substances, indole-3-butyric acid, and insert them in holes bored through the roots of the trees. We fortunately added the comment: "So you can drop any idea you may have had that Smith and Romberg were lifting pecan trees from here to there with toothpicks, though personally, we wouldn't put that past either of them. These boys really are clever when it comes to handling pecan trees."

No, we wouldn't put it past them. Our regret just now is that we limited our statement to "...when it comes to handling pecan trees." Because the sky appears to be the limit with those men. They have recently demonstrated their versatility by carrying off the second prize for bulletins, awarded by the American Association of Agricultural Editors.

In 1940, Mr. J. F. Rosborough, extension horticulturist of the Texas A. & M. College, together with Dr. C. L. Smith and Mr. L. D. Romberg, prepared a manuscript entitled "The Pecan in Texas." This was published as Bulletin B-120 of the Extension Service of the A. and M. College of Texas. A recent meeting the American Association of Agricultural Editors awarded this bulletin second place in a semi-technical class of publications, first place going to a Michigan bulletin with color illustrations.

NUT INVESTIGATIONS

Howard E. Parson, Shreveport, La.

"Vein spot is likely to cause over 90 percent of the foliage to fall prematurely from trees that have no disease control this season," he writes from the U. S. Pecan Disease Laboratory on September 20th. "Only 4.2 percent of the foliage is likely to be lost prematurely on account of vein spot from trees getting the most complete control program, i.e., raking, plowing, and spraying. Approximately 45 to 47 percent of the foliage is likely to be lost from trees getting only complete orchard sanitation or only early summer spraying. In other words, good orchard sanitation appears equal to early summer spraying against vein spot on Stuart trees, and the control effected by combining the two treatments is additive. Orchard sanitation was twice as effective in controlling vein spot if raking was done preceding the plowing for the purpose of getting the old foliage out from under the low-headed trees where it could be covered by plowing. This probably would not hold true under older, higher headed trees, especially if the plowing was finished as closely as possible to the trees with mule teams. Data on the above mentioned treatments was kindly analyzed statistically by Mr. F. N. Dodge, and the differences given found highly significant by an analysis of variance, a difference of 8.25 percent being necessary for significance at the 1 percent level.

"It is interesting to note from observations and data that premature defoliation from vein spot on Stuart trees appears to be worse in kudzu plots than in other comparable plots. I have often wondered if a heavy cover crop might not be effective in causing fruiting bodies of parasitic fungi on the ground to spend themselves before there were leaves to infect and also to hamper the dissemination of spores that might be liberated. This postulation might yet hold true for a winter cover crop but apparently it does not hold for a summer cover crop like kudzu."

Arthur O. Alben, Shreveport, La. (Pecans)

"During September I visited Texas and noted conditions in orchards at Fairbanks, Brazoria, Wharton, Utely, San Antonio, Brownwood, Comanche, Cranberry, Arlington and Denton. The prevalence of scab and vein spot all over the territory covered was outstanding. They were prevalent in native groves as well as in planted orchards in the usually dry west Texas area. Scab had attacked the Halbert variety everywhere I saw it, and in most cases the crop was a total failure...The Burkett variety is proving to be a very disappointing sort on river bottom soils. It has been severely attacked by scab and vein spot and there are also physiological troubles that result in a poor quality of nut. The variety seems to be best adapted to sandy upland soils. Whether the physiological troubles are due to soil fertility conditions or water relationships are not easily differentiated. I believe there is need for an intensive study of the nitrogen requirements of the Burkett for successful filling."

NUT INVESTIGATIONS

Felix S. Lagassé, Gainesville, Fla. (Tung investigations)

"Mr. Dyal has been keeping the supercentrifuge humming during the last two weeks," he writes October 11th. "In continuation of the study of the physical and chemical properties of soils of the tung belt, colloids were extracted from the following soil series: Red Bay, Norfolk, Ora, Pheba, Gainesville and Hernando. These are in addition to those previously extracted. It is planned to establish the types of clay minerals in these soils and to get further information on the properties of the soils by certain 'key analyses' of the colloids.

"Because the exchangeable magnesium on many of the soils is so low, a method more sensitive than the one previously used had to be worked out. A modification of Peech's technique was finally adopted and is working satisfactorily. This is a colorimetric procedure in which as small an amount as one pound per acre can be determined.

"Dr. Drosdoff reports that analyses are about completed on 18 leaf samples collected from various tung orchards in Georgia and West Florida showing leaf patterns that are suspected of being related to potash deficiency. The affected leaves were all low in potassium; the average being around .35 percent of K. The normal leaves from adjacent unaffected areas average about .70 percent of K. Dr. Potter has analyzed the data statistically and finds the differences in potash content between the affected and unaffected areas highly significant.

"In Mr. Painter's mulch plots, two separate leaf samples from cultivated rows averaged .27 percent K and these rows showed the chlorotic and necrotic patterns markedly. On the other hand, two separate samples from mulched rows that showed the chlorotic pattern only slightly, averaged .58 percent K in the leaves. Soil samples corresponding to the above leaf samples have been collected from the different areas and exchangeable potassium will be run on them."

George F. Potter, Bogalusa, La. (Tung investigations)

"This season a good bit of the so-called 'fruit rot' has been observed in various tung orchards," he reports October 4th. "Plakidas attributed this trouble to the fungus Dothiorella, but its parasitism has never been proved. Samples from a Texas orchard, where the trouble appeared to be somewhat more widespread than usual, were examined by Mr. Hines, who found the fungus. However, Hines thinks that the fungus is secondary and was inclined to believe that poor pollination might be the cause of the trouble. Some additional samples were found this week and submitted to Dr. McCann, who found that they contained embryos that apparently had grown normally up to about the stage that they should reach by the middle of July. The

NUT INVESTIGATIONS

George F. Potter (continued)

presence of such a well developed embryo as this would appear to eliminate the possibility of faulty pollination. These fruits were found only on cluster type trees. About the best explanation that can be offered at this time is that the trouble is nutritional and that the fruits atrophy because of competition for food."

John H. Painter, Cairo, Ga. (Tung investigations)

"The second day of this week, this area was very close to the center of a tropical hurricane," he writes October 11th. "Wind velocity of 70 to 75 miles an hour was reported. From the standpoint of tung, almost every one was impressed with the resistance offered. I have not yet seen a single up-rooted tung tree. This, on the other hand, is not true of pecans and pines.

"The principal damage done to tung has been the excessive whipping of foliage, the slightly premature removal of fruit, and a moderate amount of breakage due to twisting. This is the second hurricane tung has gone through with more or less flying colors. Two years ago, at Ways, Ga., tung fared noticeable better than did pecans and other trees.

"The principal breakage that we have observed in our younger plantings has been in the case of the natural crowned tree, which attained quite a respectable height and while there is insufficient evidence, at present, to substantiate any claims, it is my personal opinion that if I were growing tung in an area where such storms are ever a liability, I would train my trees to the open center vase form. It is my feeling, at present, that comprehensive tests should be made as soon as possible, using budded stock, to definitely determine the relative merit of the two types of training. The differences of opinion existing at present will never be ironed out by one man steadfastly adhering to one idea and another man adhering equally steadfastly to the opposite idea."

HANDLING, TRANSPORTATION, STORAGE, AND MARKET DISEASE INVESTIGATIONS

J. M. Lutz, Meridian, Miss.

"Wrapping Kieffer pears or placing them in the dark had no beneficial effects on softening of the fruit, although there was some indication that wrapping retarded decay slightly. The good results sometimes reported by wrapping the fruit and placing it in a cool dark place are apparently entirely due to the temperature factor...Work was started on the effects of length and temperature of storage on low temperature injury of Porto Rico sweetpotatoes. A few Jersey types were included for comparison, but because of the low yield of these varieties in this locality the quantity was limited."

FOODS COOKED, THEN FROZEN, ARE PROMISING

All-in-one dishes of food precooked and then frozen are the most promising advance in the whole frozen food industry, says an interesting press release from our former associate, Mr. H. C. Diehl, who is now Chief of the Commodity Processing Division, Western Regional Research Laboratory, Albany, Calif., Bureau of Agricultural Chemistry and Engineering. He tells us that in southern California, retail buyers can already get certain precooked frozen combinations of meats and vegetables. Cartons of frozen ready-to-heat-and-eat soups and stews containing servings for four have proved popular.

Experimentally the laboratory for the utilization of farm products has tried about everything "from soups to nuts," he adds. Research on technical methods is still going on, but results so far have been very satisfactory. Well-liked combinations include different kinds of stews containing cubed meats, carrots, onions, potatoes, or other vegetables; boned chicken and turkey rolls with stuffing; and several cooked desserts.

These products are prepared and cooked under scientific supervision by methods that save all possible food values, color, and flavor. Vitamin losses are further reduced by prompt handling at every stage. There is no kitchen waste for the consumer. When cooked just right for the table, the foods are quick-frozen. Low temperatures hold most food products unchanged. All that remains for the consumer to do is to heat up the frozen product and serve it.

One of the cross-continental air-lines has already ordered a varied assortment of these pre-cooked frozen foods to be served on passenger planes. Other quantity consumers, such as restaurants and institutions, may also find that these all-in-one dishes can eliminate labor, fuel, and unscientific cooking methods. Their convenience recommends them for emergency or combat feeding for the army or navy where refrigeration is available.

In another release, Mr. Diehl offers some very much to the point comments on the necessity for careful harvesting and handling of farm products.

"The harvesting and field handling of an edible farm product," he says, "whether it is to be marketed fresh, frozen, canned or dried, determines in large degree how acceptable the product will be to the consumer. Not only are chemical analyses and physical tests being made to determine changes in the products at various stages, but a considerable group of research workers are seeking objective tests to detect quality changes during handling. What the scientist is after is the translation of his research findings into readily applied, comparatively simple tests that can be used in industry as aids for control during harvesting, handling, and processing of the commodity."

VEGETABLE INVESTIGATIONS

C. E. Steinbauer, Meridian, Miss.

"Dr. Lutz and I spent Monday through Thursday observing results of cooperative sweetpotato variety and seedling tests at Moselle, Miss., Baton Rouge and St. Francisville, La., and commercial washing, waxing, storing and shipping methods in use in the Sunset, Louisiana, area," he writes from the U. S. Horticultural Field Station October 11th.

"At Scott, La. one shipper sent out 22 cars of washed Porto Ricos last week. Part of these sweetpotatoes were also waxed. This shipper showed keen interest in the breeding work being done in our cooperative sweetpotato program. Over 800 cars have already been shipped from Louisiana this year. In the Sunset area in addition to the large shipments made directly from the freshly dug (and washed) crop, immense quantities of Porto Ricos are stored for shipment throughout the year. Single houses holding as many as 60,000 bushels, with single shippers storing as many as 100,000 bushels are not uncommon in this area. In the majority of cases, curing of these stored potatoes is done without supplying heat. Dusting, rather than washing, is used in preparing the stored potatoes for market. Most shipping and storing is done in 'James' crates although we saw some No. 2's being shipped from Opelousas in burlap bags. Although soil rot has been lighter than usual this season, we did see some badly injured potatoes. Sunscald and blackrot were also giving some trouble. An interesting sidelight on the sweetpotato pest problem was called to our attention by Dr. Cockerham, USDA entomologist at Sunset, who pointed out that our introduction No. 47442 has been found resistant to the soil rot disease, but is one of the varieties most susceptible to sweetpotato weevil attacks.

"At St. Francisville, La. dehydrating of sweetpotatoes (mostly cull Porto Ricos) was being done quite satisfactorily. Growers were being paid $5.00 per ton for this cull stock. The volume of raw stock available, however, is relatively small. Also in this area about 100 cars of No. 2 Porto Ricos are to be shipped for canning purposes this season. Three cars were loaded on Wednesday."

"September 19th Dr. Lutz and I visited the starch plant at Laurel, Miss. and discussed various sweetpotato production, storage, and starch problems with Mr. Randolph, Dr. Gordon, and Mr. Crumpton, the cooperative starch plant manager. The plant is now operating at full capacity, about 3,500 bushels a day. It first started September 8 but closed down a few days subsequently because farmers failed to bring in sweetpotatoes at the allotted time. Many farmers were tempted to pick cotton at the current high prices rather than dig their sweetpotatoes, and some growers may lose part of their sweetpotatoes by freezing if cold weather is encountered before they can be harvested. A short visit was also made to the Mayhaw Canning Plant where crowder peas (cowpeas) and pimiento peppers were being canned..."

COORDINATED RESEARCH ON SWEETPOTATOES

Dr. Boswell informs us that this fall has seen the harvesting of more extensive experimental sweetpotato plantings than has probably ever been seen before in this country. The development of practical methods for recovery of starch from sweetpotatoes by the Bureau of Agricultural Chemistry and Engineering a few years ago has brought about a virtual rediscovery, a new appreciation of the sweetpotato as a major asset to the South.

The initial frenzy is quieting down and it is now clear that the real possibilities of the crop as food and as stock feed are greater than as a source of industrial starch. The interest in starch has led to a very comprehensive research program with the sweetpotato. While many stations in sweetpotato-producing States are conducting good research independently of any others, a large share of the sweetpotato research in the South is conducted in cooperation with our Division. New funds, first available in Fiscal Year 1940, made this enlarged cooperation plan possible.

This Division is formally cooperating with six Southern States in over a dozen locations upon one of more of five distinct but related problems. All of the group are (I) testing for disease resistance, yield and starch, large numbers of varieties and introductions collected by the Department, and seedlings produced in the cooperative scheme. Three or more stations are collaborating in the study of each of four cultural or production problems: (II) Determining how late after frost sweetpotatoes can profitably be harvested for starch factor: (III) Determining the interaction effect of spacing and time of planting upon yield and grade of both starch and market types: (IV) Determining the effect of nitrogen level, ridge height, and time of harvest on starch content, yield, grade and storage behavior, and (V) Determining the effects of curing and storage conditions on roots from certain treatments from experiment IV in relation to their value for bedding stock.

Details of procedure were developed in joint discussions of cooperating workers and have since been modified by joint action as experience indicated was desirable. All experiments are set up in either lattice squares or split-block arrangements in Latin squares. Standard forms for recording and analyzing data have been developed and furnished all workers on any one problem. All samples for starch analysis are handled by identical equipment and procedure then shipped to our field station at Meridian, Miss. where they are analyzed and results tabulated for all locations.

Most of the seeds used are produced under controlled pollination at Baton Rouge, La., although some seeds from the West Indies and from Hawaii have been obtained. Seeds are sown chiefly at Baton Rouge and Beltsville from which seedling roots or plants are shipped to collaborators for study. A very brief resume of what is in progress under this arrangement is presented in the tabulation on the following page:

COORDINATED RESEARCH ON SWEETPOTATOES

Problem	Locations	Investigators
I.....	Beltsville, Md.	Headquarters staff
	Onley, Va.	H. T. Cook
	Clemson, S. C.	J. B. Edmond
	Blackville, S. C.	O. B. Garrison, J. McD. McCown
	Experiment, Ga.	H. L. Cochran
	Tifton, Ga.	Otis Woodard
	Meridian, Miss.	C. E. Steinbauer, J. M. Lutz
	State College, Miss.) Laurel, Miss.) Stoneville, Miss.)	W. S. Anderson
	Baton Rouge, La.) Sunset, La.) St. Francisville, La)	J. C. Miller, T. T. Ayers
	Gilmer, Tex.	R. E. Wright
II.....	Meridian, Miss.	C. E. Steinbauer J. M. Lutz
	Baton Rouge, La.	W. D. Kimbrough
	Gilmer, Tex.	R. E. Wright
III.....	Blackville, S. C.	J. B. Edmond, O. B. Garrison, J. McD. McCown
	Experiment, Ga.	H. L. Cochran
	Laurel, Miss.	W. S. Anderson
	Gilmer, Tex.	R. E. Wright
IV.....	Blackville, S. C.	J. B. Edmond, O. B. Garrison
	Tifton, Ga.	Otis Woodard
	Meridian, Miss.	C. E. Steinbauer, J. M. Lutz
	Calhoun, La.	J. C. Miller, P. L. Hawthorn
	Gilmer, Tex.	R. E. Wright
V.....	Clemson, S. C.	J. B. Edmond
	State College, Miss.	W. S. Anderson
	Calhoun, La.	J. C. Miller, P. L. Hawthorn

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"The weather this entire week has been very unusual for northwest Arkansas," he writes October 4th. "The temperatures were quite moderate and there has been a series of showers varying in duration from a few minutes to several hours. We tried to complete the winter injury survey at Joplin on September 30, but turned back at Anderson, Mo. some 29 miles from Joplin, due to rains.

"Starting October 1 we began to havest the Ben Davis apples in our spray plots. By dodging between showers we completed all but one count tree by the 3d. Heavy rain during the night and intermittent showers the morning of the 4th caused us to postpone finishing the remaining tree until later. It is evident from the field work (the results, however, are not yet computed) that the 1941 experiment will yield some figures of interest in regard to the control of apple blotch. Apple scab is of minor importance even on the non-sprayed check trees, and it seems very doubtful that the experiment will yield significant figures on the control of the scab fungus this season."

H. F. Bergman, East Wareham, Mass.

"Picking of the 1941 crop of cranberries on the State bog was finished September 25th. The crop this year amounted to 750 barrels as against 430 for 1940. This difference appears to be related to the oxygen content of the water during the winter flooding period. During the winter of 1940-1941 there were only four or five days immediately following a heavy snowfall on January 24 when there was very little or no oxygen in the water whereas during the winter of 1939-1940 the water was devoid of oxygen or nearly so for some five or six weeks. It was very evident when the winter flood was drawn off the bog on April 1, 1941 that the vines were in very much better condition than they were the previous year when the winter flood was taken off."

R. B. Wilcox, Pemberton, N. J.

"The most important item of weather is the drouth, which is beginning to be serious throughout this section," he writes September 30th. "During the last five weeks there has been only 0.21 inches of rain, none of which fell during the last three weeks. Official records on stream flow are not available here, but observations and local reports indicate that the level of the ground water, as shown by wells, ditches, and certain reservoirs, is lower than for a number of years, and certainly considerably lower than during our dry spell in the spring. Many shallow wells are completely dry...Blueberries continue to suffer, especially on lighter soils or in poorly drained areas. The set of fruit buds appear to be good, but the late growth is deficient, even where enough water is available to maintain growth."

SUBTROPICAL FRUIT INVESTIGATIONS

W. W. Aldrich, Indio, Calif.

"The Deglet Noor date crop this year is characterized by an unusually large amount of severe cracking and blacknose," he writes from the U. S. Date Garden on October 1.

"Apparently late fruit that escaped cracking as a result of the high humidity on four consecutive days in July (July 21, 22, 23 and 24) were cracked either by the rain on August 10, or by the high relative humidity on several days following the rain. This August rain caused some splitting and decay of fruits, which dropped during September. Probably 25 to 30 percent of the total crop will be lost, as a result of the rain or high humidity. Since this is the sixth year during the last 17 years of serious rain damage to Deglet Noor, loss from rain damage is apparently a hazard to be expected for this variety.

"Late August and September were unusually cool, and fruit is ripening two or three weeks later than 'normal.' In spite of such cool weather the Halawy fruit developed serious shrivel. Nixon was ready for this, and now has data to prove that fruit thinning, by cutting back the strands, materially increases the shrivel as compared to less thinning.

"A very poor survival of Deglet Noor offshoots planted in Block 2 in 1940 caused George Leach and I to use our available Deglet Noor offshoots in 1941 in a planting study. With only about 36 offshoots of large, medium and small sizes, respectively, our replications had to be confined to four. The variability in offshoot growth, independent of our treatments, indicates that one or more important factors affecting offshoot growth following planting is still not understood.

"Much to our surprise, irrigations as much as 10 days apart resulted in as much leaf growth of large or medium offshoots as irrigation 3 to 4 days apart (commercial practice). Medium sized offshoots grew as well as large offshoots, but, as expected, small offshoots grew poorly, particularly with 10-day irrigations. More significant results were the greatly reduced survival of offshoots with tops not wrapped in burlap and of offshoots delayed five days between cutting and planting. The deleterious effect of not wrapping the tops is of immediate practical importance, since many of our leading date growers consider wrapping unnecessary.

"Dr. Walter Reuther is now a member of our staff, and took charge of the U. S. Date Garden on October 1. He and Roy Young have already begun the continuation of the study of carbohydrate changes in the date palm trunk."

ALDRICH AND REUTHER MOVE

Dr. W. W. Aldrich is now making his official headquarters in the Federal Building, Riverside, Calif. (P.O.Box 1066), where he will be able to keep in closer touch with all of the citrus and subtropical fruit investigations in the Southwest. Dr. Walter Reuther has moved on from Gainesville, Fla. to take charge of the U. S. Date Garden, Indio, Calif.

SCIENCE MEETINGS

In connection with papers and attendance at the American Association for the Advancement of Science meetings at Dallas, Tex., December 29, 1941 to January 2, 1942, please consider carefully the following points:

Complete papers, except in special cases, must reach the Bureau office for approval by December 10. This means that they should reach Beltsville by November 20, in order that there may be time to correspond with writers before submitting the papers to Dr. Auchter, should there be any question concerning them. The latest date that papers may be submitted to the Bureau for approval is December 20, and such later papers must be accompanied by statement explaining why it was not possible to submit them sooner.

Not more than approximately three persons from each Bureau will be authorized to attend these Dallas meetings at Government expense. If you feel that you should be so authorized, please have your request, with a full statement of the necessity for your attendance at Government expenses, in Dr. Magness' hands not later than November 15.

If you expect to attend the meetings at your own expense, but on official time, the request for such attendance should be in Dr. Magness' hands by December 5. We anticipate that authorization will be granted to practically all members of the Division's scientific staff who request authority to attend at no expense other than salary.

Your cooperation in the early preparation and submission of papers will greatly facilitate and improve the work of reviewing such papers both in the Division and in the Bureau.

RECEPTION FOR MR. H. P. GOULD

The big Log Cabin on the Beltsville grounds was crowded from 1 to 3 p.m. Saturday, October 18, when a reception was tendered to Mr. and Mrs. Gould. Though earlier in the day rain had threatened, the afternoon proved to be delightful, with just enough chill in the air to justify the friendly wood fire in the cabin's handsome fireplace. Light refreshments--high both in quality and quantity--were served, and Mr. Gould was presented with a fine gold watch, together with a book containing autographs and photographic reminders of his years of service. The presentation speech by Dr. Magness, and Mr. Gould's reply, both were greeted enthusiastically.

APPEARANCE OF EMPLOYEES AS EXPERT WITNESSES

In connection with the appearance of employees as expert witnesses in litigation in which the Government is not a party, the Secretary on March 15, 1933, issued the following "Order to Employees of the Department of Agriculture," which is still in effect:

> "It is ordered that employees of this Department who are engaged upon scientific investigations or other work whereby they acquire from property owners or others information or data on land values, crop values, timber losses, operating costs, income, profits, and scientific data or like information shall regard such information or data as confidential, and they are hereby prohibited from disclosing such information or data thus obtained or giving out copies of any records thereof to private persons, or producing such records or copies thereof in court, or appearing as witnesses, expert or otherwise, in any litigation for the purpose of testifying as to any facts or knowledge received by them through such investigational or other work.
>
> "Whenever subpoenaes shall be served upon such employees, they will appear in court to answer thereto and respectfully decline to testify to, or produce records pertaining to the matters referred to herein, on the ground that the same is the confidential property of the Department of Agriculture, and on the ground of their being prohibited therefrom by this Order.
>
> "The Bureau should be promptly notified of subpoena as provided under 'Appearances,' in par. 688 of the Administrative Regulations."

In view of this order, any employee of the Division who is subpoenaed solely because of and to testify in his official capacity or to produce official records or information, should notify the Business Office by letter or telegram, stating the names of the parties litigant, the matter of the suit, and the nature of the testimony the employee expects to give.

Should the proposed testimony or the production of records be deemed prejudicial to the public interest, the employee will be instructed to present to the judge a copy of the Secretary's Order of March 15, 1933, and decline to testify or to produce the records, in accordance with the second paragraph of the Order, quoted above.

ADMINISTRATIVE NOTES

Preference Rating — There has been issued to the Department by the Office of Production Management, Preference Rating Order No. P-43, Serial No. 1, under the Research Laboratories Supplies Plan, which extends Preference Rating A-2 to deliveries of materials (any commodity, equipment, accessories, parts, assemblies of products of any kind) that will be used for scientific research conducted by the Department, or that will enter, either directly or indirectly, at any stage, into the production of such material, during the period from August 28, 1941 to February 28, 1942.

This preference rating, however, is applicable only to orders covering supplies (including chemicals) and equipment needed for strictly scientific research work, and is to be applied only in cases where the material ordered can not be obtained without such rating. Therefore it must NOT be used merely to secure deliveries greater in quantity or on dates earlier than required. This rating definitely does not apply to construction, building materials, automotive equipment, or materials in a similar category. Invitations for bids on materials to be used for scientific research should contain the following statement:

> The materials (any commodity, equipment, accessories, parts, assemblies of products of any kind that will enter, either directly or indirectly, at any stage, into the production of such material) specified in this invitation will be used for scientific research, on which the Department may apply Preference Rating A-2 under Preference Rating Order No. P-43. If delivery of the material(s) specified cannot be made without the application of the preference rating, a statement to this effect should be submitted with your bid.

Purchase orders placed in the field covering materials for scientific research, upon vendors in the open market or upon contractors of the General Schedule of Supplies, should be issued in the usual manner without any reference to Preference Rating Order P-43. Then if such vendor or contractor requests a priority rating before filling the order, submit to Mr. R. G. Jones, Supply Section, U. S. Horticultural Station, Beltsville, Md. a detailed statement outlining the need for the material involved and how it is going to be used for scientific research together with any additional information that will help to justify the need for the material. From this information will be prepared a request to be submitted to the Division of Purchase, Sales and Traffic for final approval and forwarding of the Preference Rating Order. A similar statement should accompany all purchase orders placed through the Division's Supply Section at Beltsville, covering materials for scientific research, where it is anticipated a priority rating will be required.

Vol. 13 No. 21 November 1, 1941

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY NEWS LETTER

The official organ of the Division, through which the staff at widely separated locations is kept informed of the progress of technical and scientific investigations at Beltsville and at various field stations. The News Letter also carries administrative orders and memoranda with necessary explanations and directions. Since the material used is often of an informal and confidential nature it should not be published without the approval of the Division. Also, reports of field workers and others represent their personal opinions, and so are not necessarily the official and final word on the matters they discuss.

John A. Ferrall, Editor

Vol. XIII U. S. Horticultural Station, Beltsville, Md. No. 22
November 15, 1941.

Cranberries In days long ago, when birds, trees and flowers could talk, a settler in Massachusetts observed Indians picking the red berries that grew along streams, in marshes and swamps and bogs, wherever water was apt to rise over them in time to protect them from frost, insects, and winterkilling. Anxious to find things to supplement his meager diet, he asked the Indians about the berries and was assured that they were very good to eat. He gathered a handful and putting a liberal number of the berries in his mouth, chewed on them. But not for long. "Holy Cow!" he ejaculated in dismay. "I'm poisoned!" He wasn't. He just hadn't found out how to use cranberries.

Fortunately he was a man of an inquiring turn of mind and, convinced that the Indians had not meant to play a joke on him, he questioned them further and learned that they used the cranberries with dried meat. As wild turkeys were plentiful, it chanced that it was with the turkey that the settler first tested the cranberries--to discover at once why the Indians used them to add a flavor tang to meat. The popularity of the cranberry spread rapidly and it became a standard article of commerce, being traditionally associated with the turkey for Thanksgiving dinners. The season of consumption spread until now fresh cranberries are available from September to March or even April, and canned berries, comprising about one fourth of the crop, are available the year around. The production has leaped to 60,000,000 pounds a year, of which some 65 percent are grown in Massachusetts, 15 percent each in New Jersey and Wisconsin, and 5 percent in Oregon and Washington.

Efforts to grow cranberries in cultivation began more than 100 years ago, but it was not until around 1850 that much success was achieved. By that time growers had found a way to beat Nature at her own game, and were providing better and more accessible "bogs" on which the berries could be grown.

That we take the cranberry quite seriously is shown by the fact that we assign full time pathologists and part time assistants to the cranberry sections of Massachusetts and New Jersey, while a third research specialist at Beltsville gives about one half of his time to the crop. This is in addition to the time devoted by cooperators in such fields as the production of tetraploid plants. Several tetraploid seedlings have been obtained in connection with the breeding program at Beltsville that give promise of blooming next spring. Field laboratories are maintained in Massachusetts and New Jersey, in cooperation with the State stations, our work being restricted to pathological (disease) problems, while the State workers look after horticultural, insect infestation, and similar problems. The primary purpose of our breeding program is to develop varieties resistant to a virus disease called "false blossom," that has reduced New Jersey's production about 50 percent, while increasing the cost of production in most other cranberry sections.

Cranberry growing constitutes a unique agricultural industry, having no counterpart in methods of culture among agricultural crops, and using soils practically worthless for ordinary crops. In building a cranberry bog the soil is drained by a seriesof ditches to a depth of at least 18 inches, is cleared of all vegetation, made smooth and level, and enclosed by dams high enough to hold two feet of water over the surface. The levelled bog floor is usually covered from 3 to 6 inches with clean coarse sand, and a reservoir provided to supply water as needed, connected to the bog by a system of ditches and canals to distribute water over the entire area quickly. A shallow layer of water warms the overlying air and affords frost protection. In most cranberry sections the vines are submerged under water during the coldest months to prevent winterkilling. Except at these times cranberry bogs are kept well drained-- contrary to the widespread belief that the berries are grown in water.

Formerly all cranberries were picked by hand. This made necessary a large picking force and all members of the family--men, women, and children--were drafted, the harvest season being a picturesque and gala occasion. Appropriately enough, a large portion of the Wisconsin crop is still harvested by Indians! The major portion of the cranberry crop, however, is now harvested with especially designed scoops or rakes that are combed through the vines, stripping off the berries and retaining them in a box-like compartment behind the teeth of the scoop. In Wisconsin most of the berries are raked from the water, where they float on or near the surface of a shallow flood. Cranberries are stored in warehouses at the bogs until the markets are ready for them, harvesting usually starting early in Septemberand being over by the middle of October, whereas the best market demand comes later. At shipping time the cranberries are passed through a blower that removes leaves, dead vines, etc. and then pass over a series of inclined bounding boards placed step-like one below the other. The sound, elastic berries bounce from these boards over a barrier; the soft or decayed cranberries will not bounce, fall by the wayside, and are discarded.

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"The first collections of the peach rust fungus were made on October 6, and the abundant rainfall has apparently favored the spread of the urediospores as the fungus is much more prevalent than it has been for several years. So far no teliospores have been formed. During the week ending October 25th I received specimens from Texas also without teliospores, and two collections from California with teliospores."

He had written October 18th: "Another week with much rainy weather. It was clear the first two days but rained intermittently from the 14th to the 17th and is clear today. The frequent rains of the past several weeks have certainly brought an ample supply of soil moisture to the district and everywhere the grass and trees are bright green. This is quite a contrast to our usual fall conditions with all the vegetation dried out and brown."

R. B. Wilcox, Pemberton, N. J.

"Practically all of the cranberries remaining unpicked by the 12th were on bogs that had some frost protection, and no damage has been reported," he writes October 15th. "A number of growers still have berries in the bog. Some growers have exceeded their estimated crop, but they are in the minority, and the crop of the State as a whole will be considerably under the estimate.

"The hybrid seedlings are in good shape, not suffering from drought. We are still preparing the ditches for quick drainage in the spring in preparation for planting.

"I made a quick trip to Beltsville on the 8th and brought back some presumptive vectors for the blueberry stunt disease. These were placed on blueberry plants in the field at once, but at just that time the weather turned cold and the insects, accustomed only to Beltsville greenhouse temperatures, have been suffering from exposure, leading to all sorts of complications, from chilblains to pneumonia. It is doubtful whether we will be able to secure transmission of the disease this fall, or even test it reliably."

George F. Waldo, Corvallis, Oreg.

"The strawberries throughout the State are reported to be in general better than usual for this time of year. However, virus diseases are quite general. The conditions this fall favoring plant growth seem also to favor the spread of these diseases."

MIGRANTS GO TO SCHOOL TO LEARN APPLE PACKING

"By practicing on wooden 'apples' the inept fingers of former cotton pickers and drifting laborers are becoming skilled in apple packing," says a Department Press Release of November 2d. "Both migrants and orchardists in the Yakima Valley apple country of Washington state are benefiting. Some of the migrants at the Farm Security Administration's Yakima migrant labor camp are spending five nights a week, four hours a night, learning the semi-skilled occupations that go on in the packing plants. How to grade, wrap, and pack the apples and put the lids on the boxes are parts of the 'course.' They learn to reach for an apple with one hand, the wrapping tissue with the other, wrap the apple with a single twisting motion, and deftly pack it in the box. This job is one step up from picking apples. They can make better money packing apples than as unskilled orchard hands.

"The WPA furnishes an instructor for the class. An Employment Service official at the camp, queried about labor supply by an orchard owner, now is able to answer that he can furnish pickers--and packers, too. This year, for the first time, the Employment Service has a man stationed on each FSA migrant labor project.

"The class is held after the day's work. Many who start find the double task--long hours of 'school' after long hours of reaching into the trees--too hard to keep up. But those who manage to finish the course get a certificate, and usually a better job."

APPLE STORAGE TIPS

And, speaking of apples, cold storage is not a cure-all in the marketing of apples, our colleague C. O. Bratley, of the section of handling, transportation, storage and market disease investigations, emphasises in a recent memorandum prepared for members of the association of warehousemen. Success of storage depends in large measure on the quality and condition of the apples delivered to the warehouse, he points out.

There are wide differences in the storage life of different varieties of apples, he adds, and almost equally wide differences with a single variety when grown in different orchard regions. McIntosh, for example, grown in New York or New England can be stored until midwinter, but McIntosh from orchards in the Middle Atlantic states are early apples, storable for only a few days.

Northern grown Baldwins, Rhode Island Greenings, and Northern Spies may be stored all winter, but the same varieties grown farther south are suitable for only brief storage. For safe storage the warehouseman needs to know not only the variety and condition of the stock, but also where the apples were grown!

COOPERATION--AND COMMENDATION

In connection with the approval on October 17, 1941 by the Florida Citrus Commission of the new internal quality grade specifications for oranges, the Citrus Grower of that date pays a nice compliment of Dr. Paul L. Harding of our section of handling, transportation, storage and market disease investigations, crediting him with the basic research that "forms the firm foundation for this recognition of quality as the paramount ingredient in citrus fruits."

Here we have, too, another splendid illustration of the ability, and willingness, of our specialists to cooperate with their fellow workers. The new grade is based on results of a three year investigation of seasonal changes in Florida oranges, reported in Technical Bulletin 753, "Seasonal Changes in Florida Oranges," by Paul L. Harding, J. R. Winston and D. F. Fisher. But--we passed the ball to Mr. W. E. Lewis of the Agricultural Marketing Service and he carried it over for a touchdown. What we mean is that Mr. Lewis took Dr. Harding's studies, combined them with his own statistical survey of shipments from Florida and drafted the new specification which, according to the Grower, are considered "an outstanding achievement of scientific and practical accomplishment."

The requirements call for a minimum of 9 percent soluble solids, a minimum of one-half of 1 percent acid, and a graduated ratio of soluble solids to acid beginning at 9.50 to 1 at 9 percent solids and decreasing by five one-hundredths for each increase of one-tenth percent solids. They also call for a minimum of 4-1/2 gallons of juice to a standard packed box. A novel feature of the new grade is that it will be a permissive supplement to present grades. That is, such lots of oranges as are found to comply with its specifications may be marked "A-quality juice" in addition to the usual grade designations, such as "U. S. No. 1 Bright," "U. S. No. 2 Russet," etc.

The Citrus Grower goes on to say that this action is "considered as marking the first definite step by any State citrus industry to meet the demand of consumers and the trade for internal quality certification of fruit."

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Dr. Brooks Praised

The same issue of the Citrus Grower singles out another popular member of the staff of the section of handling, transportation, storage and market disease investigations for words of praise--Dr. Charles Brooks. Dr. Brooks, of course, is one of our pioneer investigators in this field. Of his work the Grower says: "It is doubtful if any single pathologist has contributed as much to the fresh fruit industry." The comment is made in connection with Dr. Brooks' transfer to Orlando, Fla. (415 N. Parramore Street), where he will make his headquarters in future, giving full time to citrus problems. During the past three or four years, before transferring to Florida, he has given an ever-increasing share of his time to the citrus work.

SUPPLEMENTAL REFRIGERATION OF FRUITS AND VEGETABLES

W. T. Pentzer of the Section of Handling, Transportation, Storage and Market Disease Investigations, with headquarters at Fresno, Calif. writes in Refrigerating Engineering for October on supplementing refrigeration of fruits and vegetables.

He points out that each commodity appears to require a special treatment. Sulfur dioxide is particularly suited for decay control in grapes, but it is too toxic for other fruits and vegetables. Nitrogen trichloride has found application on oranges and to a limited extent on cantaloups. Methyl bromide and ethylene oxide have shown little value so far as fungicides. Ozone must be classed likewise as ineffective in the concentrations commonly employed. Carbon dioxide is of benefit in the storage of some varieties of apples that are harmed by low temperatures and gives definite promise as an accessory treatment in the shipment of highly perishable fruits such as cherries and berries. Ultraviolet light has not controlled molds in transit and storage. The incorporation of volatile fungicides in the packing material to give protection against decay in transit and storage offers considerable promise, and such treatments as copperized wraps and oil wraps have proved their worth.

POTATOES BY TELEVISION TEACH MODERN MARKETING

"Television brought an estimated 5,000 housewives literally eye-to-eye with potatoes in a recent program sponsored by the U. S. Department of Agriculture over Station WNBT, New York," says a Department Press Release of October 19th. "This marked the Department's entry into this newest field of information and entertainment. With the potato as an example, the television audience was shown how Federal grades and standards can help the homemaker in selecting foods for quality and economy.

"Seen as well as heard, the program was a roundtable discussion. Participating were two housewives, a Department of Agriculture expert, and the announcer. The screens of New York's television sets alternately depicted the faces of the speakers and the potatoes they talked about. When illustration was advantageous, the television camera focused on the potato. This was the first of a series of television programs planned by the Agricultural Marketing Service. Others will demonstrate the value of Federal grading of fruits and vegetables, dairy and poultry products, and meats.

"Illustrating the difference between the various grades of foodstuffs, these programs will show New York City homemakers the uses for which the various grades are best suited. They will explain when it is desirable to purchase top quality foods and when less expensive grades will serve as well, will show the importance of grade labeling, and reveal what the various grades mean to the consumer's dinner table and pocketbook."

NUT INVESTIGATIONS

George F. Potter, Bogalusa, La. (Tung investigations)

"October 25th Mr. Hines bade us farewell and went to his home at Ripley, Miss. to take a few days' leave before starting for Ecuador to conduct a rubber survey. Before leaving he practically completed the pruning work in two orchards near Varnado, La. that are infested with thread blight, and that are to be used for experiments on control of the disease. The job will be completed by Dr. Fernholz.

"As part of this work, each orchard was mapped and the degree of infection on each tree recorded individually. In one orchard there are two distinct foci of infection. The distribution of the infected trees would indicate that spores must have been produced at these two points, probably during the season of 1938. The spots of disease probably were not conspicuous during the summer of 1939 but by 1940 had developed to a point such that we discovered them. Last spring a single tree in our so-called isolated orchard was inoculated with the disease. To date it has spread only by contact from one leaf or twig to another. Some of the infected twigs pruned out of the orchard at Varnado will be taken to the isolated orchard and placed under trees which are not infected. In this way we shall determine whether or not an infected twig on the ground is capable of spreading the disease in the orchard. A program of spraying is contemplated for the coming winter and spring but the list of spray materials to be used has not yet been worked out."

Milo N. Wood, Sacramento, Calif.

"All types of chestnuts are producing large crops in most cases," he writes October 11th. "The early varieties of chestnuts are already harvested and harvesting is going on at the present time for the medium and the late ripening varieties. It seems to me that harvesting dates this year are about the same for chestnuts as usual. Chestnuts, of course, are planted in much smaller acreages than almonds or walnuts, but considerable interest is shown in developing chestnut orchards and we have many inquiries in regard to them.

"Shot-hole and brown rot had something to do with reducing the almond crop, but the normal crop was reduced much less by these troubles than by the lack of pollination."

Arthur O. Alben, Shreveport, La.

Writing from the U. S. Pecan Laboratory on October 25th he says: "Judging by the condition of the foliage in the orchards of South Louisiana, there will be little or no crop of improved varieties in that section of the State next year. In North Louisiana the condition of the foliage is much better, except where there has been severe injury from black aphid infestation."

TESTS ON WINTER GRAPE PRUNING

"After the leaves have fallen, one month is about as good as another for pruning grapevines in sections where winter temperatures rarely drop lower than 10 degrees below zero," says the Daily Digest for October 28, referring to studies by C. A. Magoon and I. W. Dix of our section of deciduous fruit investigations. "This recommendation, somewhat contrary to popular belief is on the strength of recent Department investigations in which Concord, Delaware, and Ontario varieties were used. Vines of each were pruned at monthly intervals beginning November 1 each year, up to and including April 1. Vines pruned annually for 4 years on November 1 were no more subject to winter-killing than those pruned later. Neither were they stunted in growth nor reduced in yeild of fruit. Where very low winter temperatures are encountered, however, winter-killing may take place if early pruning is followed by a heavy freeze." These studies on the relation of time of pruning to performance of grapes were reported on by Messrs. Magoon and Dix at the December meeting of the American Society for Horticultural Science at Philadelphia last December. The studies were initiated in the fall of 1934 at Beltsville in a vineyard devoted to a study of the performance of Concord, Ontario and Delaware varieties when grown under different vineyard practices.

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Death of Harold Mills

Harold S. Mills, agent, located at Experiment, Ga. died of a heart attack October 27th. He was engaged in co-operative peanut investigations conducted by this Division and the Georgia agricultural experiment station. Mr. Mills was a native of New York; did his undergraduate and graduate work at Cornell, and was on the vegetable crops staff of that institution for about ten years. He conducted economic surveys of certain phases of the canning industry and the production of canning crops, and was later stationed for several years at Cornell's field station at Riverhead, Long Island. He left Cornell University about 13 years ago to take charge of the breeding and varietal development work of the Landreth Seed Company at Bristol, Pa. We believe that all commercial seedsmen and horticultural investigators will agree that Mills did a fine job while with that firm.

Slightly less than a year ago he was chosen as the Division's representative and investigator in the cooperative peanut investigations organized with the Georgia experiment station last fiscal year. His broad experience in practical crop production and plant breeding, and his contacts with the seed trade, combined to make him an unusually competent workman in the field of varietal improvement and testing. He conducted with accuracy and speed a very extensive and intensive program of work in cooperation with Dr. Higgins and others of the Georgia station. His untimely death has cut short a career that promised much more for the future. He was popular among those who knew him because of his more than common friendliness and happy disposition. His loss will be keenly felt by many friends both in research and in the seed trade all over the country.

PRUNINGS

"Nibbling" Sweet Corn — The Associated Press says than an intrepid English farmer is growing an acre and a half of sweet corn that he plans to offer for sale at 15 cents an ear. "Corn is a favorite food in America," says an English newspaper, commenting on the experiment. "It is regarded as a great delicacy. The ear is boiled for 15 minutes and served like a potato, in its jacket. The leaves are removed, butter is spread over the corn, and it is sprinkled with pepper and salt. Then, holding the ear at the ends, you nibble the corn like a rabbit."

This is a slight variation of an account contributed to the Journal of the Royal Horticultural Society (England) for June, 1938, by André L. Simon who discussed some "unusual vegetables" -- unusual, that is, so far as their availability to the average English consumer was concerned. His recommendation with respect to sweet corn follows:

"The best way to deal with sweet corn in the privacy of one's own home is to boil the cobs for about 20 minutes and eat them mouth-organ fashion with salt, pepper and fresh butter on them, gnawing at the corn with one's front teeth, rabbit-like. They never taste so good in any other way. However, where the evening is a party and hands must be kept off, there are many ways of dealing with sweet corn. It can be made into soups and puddings, or served as a vegetable, sauté in butter or with cream..."

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Plastic crates from citrus pulp — The Florida citrus industry appears to be seeking to make itself self-contained all along the line for the Florida Research Foundation is suggesting the possibility of making Florida's citrus field crates of plastics with citrus pulp as a base! Sulphuric acid would be mixed with the citrus pulp to effect the plastic. The Foundation starts to work at once on a program in which some of the $50,000 recently approved by the Florida legislature for citrus research will be expended.

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Original Delicious Apple tree is dead — We know it is going to be a shock to Ed Smith, out at Wenatchee, but apparently the news from Winterset, Iowa, is true--the original Delicious apple tree has succumbed to injuries suffered last winter. This tree, one of a number of seedlings set out in 1872, was surrounded by a strong fence for many years and it is possible that a young tree will replace the old one. That is, suckers have appeared, and one of them will be encouraged to grow.

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P. S. -- The Business Office still needs copies of purchase orders promptly after the end of the month--so that it may complete its report to the Chief of Bureau by the 7th of the month.

MR. GOULD EXPRESSES HIS GRATITUDE

In the November 1, 1941 issue of the News Letter, we mentioned briefly the reception tendered to Mr. and Mrs. Gould at the Log Cabin, U. S. Horticultural Station, Beltsville, Md. from 1 to 3 p.m. Saturday, October 18, 1941. We feel that his prompt note of appreciation should be shared with the entire personnel of the Division, especially since some of his older friends on the field staff participated in our plans for the reception and the gifts.

"Washington, D. C.
October 21, 1941

"TO MY MANY DIVISION AND BUREAU FRIENDS:

"I cannot let pass--and I surely do not want to do so, even if I could--the occasion of the recent reception given me and Mrs. Gould incident to my official retirement at the end of September, without recording an expression of appreciation of that event and its significance to me.

"The Log Cabin, more beautifully decorated than I have ever seen it before, the large number of Division and other friends who were present and the spirit of good comradeship that prevailed, the lovely watch and chain presented to me with complimentary remarks by my successor which it was hard to believe were being directed to me, and not forgetting that much prized book of autograph signatures containing some 185 names of associates--all these combined to make the occasion a most delightful experience, with memories never to be dimmed by the passing of time.

"It is here that words fail me as means of expressing the feeling that I would like to impart. It is true when I say that I prize the watch as one of my choicest personal possessions, and the book of signatures as an enduring joy that will increase as time goes on, but these are trite phrases that lack much of what I would like to express. That lack is bound up in the priceless friendships and happy associations that began early in my service in the Department and which have increased and multiplied in the passing years, but in none so much as in the more recent years when, with added responsibilities, my contacts and relationships were so greatly extended. It is these abiding friendships and associations back of material things that give surpassing beauty to the whole setting.

"Any attempt to say more would still leave unsaid that inexpressible something for which there is no language--except to add a final word of gratitude for the unfailing loyalty and constancy of those among whom I have worked for these many years.

Most sincerely,

H. G. Gould

H. P. Gould."

STATISTICAL SERVICE

The Department's Division of Publications has a statistical editor who devotes her time to the statistical and mathematical checking of manuscripts submitted for publication, and she usually finds such checking vitally needed! For this reason Dr. M. C. Merrill, Chief of Publications, has decided that our authors will be helped by discussions of statistical methods and problems and is issuing a Statistical Service Sheet that will offer an opportunity for a sort of round table discussion of such matters. Technical workers interested may obtain copies by writing to the Department's Office of Information.

In the first issue, Marion M. Sandomire, statistical editor, points out that both the business man and the scientist have their accounting systems. One is referred to as bookkeeping, the other as statistics. Each involves a necessary routine that is seldom spectacular but that is of inestimable value in analyzing the true condition of affairs.

"Relative values may be determined in more than one way or may be influenced by more than one factor. For example, Van Uven notes that 'we know that some observations were made under favorable circumstances, while we felt less sure about other observations, either on account of personal indisposition, or of imperfections of the measuring instrument, or of the vagueness of the object observed.' Such thoughts arise in connection with certain types of physical experimentation. A more simple notion arises from a consideration of the relative sizes of the data-groups from which quantities are obtained. We know that a quantity obtained from a large group is a good one in the sense that it is highly probable that it represents the true, but unknown, value, while a quantity from a small group yields a result less probable of representing the truth. It is not fair, therefore, as Tippett points out, to give all groups, whether large or small, the same weight...

"The question of weight reduces to one of sample size when the variance or surrounding circumstances remain constant. Thus, if measurements were made on an eclipse by two observers, and if one of them took five readings with an inaccurate device while the other took two readings with a highly polished lens, the weighting would not be just a matter of the number of readings. If the original observations are inaccurate, no amount of weighting will produce any kind of reliable or unbiased result for there would be no way of measuring the bias."

References for those interested in going further into the subject:

Bowley, Arthur L. Elements of statistics. 6th ed. 503 pp. illus. London and New York. 1937.

Fisher, R. A. The design of experiments. 2d ed. 272 pp. illus. London and Edinburgh. 1937.

Tippett, L. H. C. The methods of statistics. 222 pp. illus. London. 1931.

Uven, M. J. Van. Mathematical treatment. 309 pp. illus. Groningen-Batavia. 1935.

RETURN TO DUTY AFTER MILITARY SERVICE

Every person who, subsequent to May 1, 1940, has entered upon active military of naval service of the United States, regardless of the authority under which he entered, is entitled to all the reemployment benefits of Section 8, Selective Training and Service Act, 1940. (See Personnel Circular 100 and supplements) Under the provisions of this section, any employee who, in order to perform military training and service, has left or leaves a position other than a temporary one, must be restored to such position or to one of like seniority, status and pay. In order to be entitled to restoration, the person must have received a certificate of satisfactory service in the armed forces, must still be qualified to perform the duties of the civilian position, and must make application for reemployment within 40 days after discharge from the armed forces.

An employee who has completed his tour of military duty and satisfies the above requirements is entitled to immediate restoration. Application should be made to the bureau or office in which the person was employed prior to military servece. A certified copy of the certificate of satisfactory service must be retained in the employee's service record file in the bureau or office concerned. A Certificate of Medical Examination (Form 2413) is not required prior to or after restoration. (For method of reporting restoration action, see Personnel Circular 93, Supplmnt. 5)

Personnel changes necessitated by the restoration of such an employee must be made within a maximum period of 30 days, or if possible, simultaneously with his return to duty. When making these changes, an employee occupying a position "Subject to Return of an Employee from Military Training and Service" (Personnel Circular 93) who is to be assigned to another position, may continue to receive the same rate of compensation he currently receives, or any lower rate, provided it is within the salary range of the grade of the position to which he is to be assigned.

NATIONAL FARM MACHINERY REPAIR PROGRAM

"There has been inaugurated a nation-wide program for the repair of farm machinery to be conducted by the USDA Defense Boards at the request of the Secretary of Agriculture," says BPI Memo 1241 of November 1, 1941. "This program is intended to call the attention of farmers to the fact that agriculture must bear its share of the curtailment necessary in the consumption of steel for all civilian uses in order to meet defense needs, and to request farmers to repair their machinery during the slack season of the next few months, with a view to the continued use of machinery which might, under normal circumstances, be replaced with new machinery.

"Although the Bureau does not have a direct part in the program, and the total amount of farm machinery operated by the Bureau may be relatively small, it is believed that a special effort should be made to repair our farm machinery within the next few months to place it in the best possible operating condition. By so doing, we shall be cooperating in the general program, and avoiding possible delays and losses which may occur if repair and reconditioning of machinery is delayed."

GENERAL ACCOUNTING OFFICE

Some decisions of general interest:

B-20182.(S) Vehicles--Used--Cash Sales in Lieu of Exchange. When a used passenger-carrying motor vehicle is to be exchanged in whole or part payment for a new one both cash bids and trade-in offers must be solicited and, if the cash bid is higher, it must be accepted, the proceeds deposited in the Treasury as miscellaneous receipts, and the full price of the vehicle charged to the passenger-carrying vehicle appropriation limitation, even though the appropriation estimates were prepared, and the appropriation made, on the basis of the net cost of vehicles...

B-20840. Contracts--Foreign Products--Waiver of Contract Stipulations: In view of the specific finding and certification by the Secretary of War to the effect that aluminum is not domestically produced in quantities sufficient to meet the needs of the defense program, the War Department may, with respect to aluminum, waive by written notice to contractors in lieu of formal contract amendments the domestic origin stipulations, incorporated pursuant to the act of March 3, 1933, in existing contracts, and payments under such contracts will not be questioned on account of the delivery of aluminum of foreign origin on and after the date of the Secretary's certificate.

B-20372 (S). Traveling Expenses--Transfers--Travel from place of Leave. If an employee's official station is changed while he is in a leave status, and, instead of returning to his old station, he elects to report directly to the new station, he must bear the expense thereof equivalent to the cost of returning to his old station, and this is so even though the employee travels no greater distance from the place of leave to his new station than would be required should he travel from the old station to the new station.

B-18229 (S). Annual and Sick Leave Advances--Compensation Adjustment upon Separation from Service: Exceptions to general rule prescribed by law, or regulations having the force and effect of law, are required to be strictly construed. The exceptions to the general rule in the Annual and Sick Leave Regulations that an employee must be charged for overdrawn annual and/or sick leave are required to be strictly construed. An employee who, although eligible for retirement for disability, voluntarily resigns from service on account of disability without making application for retirement must refund the compensation received prior to separation from service for advanced annual and sick leave.

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Allotments By quarters Don't forget--You must consider purchases of supplies and equipment during the period from October to March so that the expenditures in each quarter of the fiscal year will be reasonably uniform. With heavy spring and early summer expenses for labor and other requirements, offsetting purchases or expenditures should be made in the second (October-December) and third (January-March) quarters so that the expenditures for the fourth quarter (April-June) will not exceed the proportionate quarterly share. (See News Letter, Aug. 1, 1941, page 176.)

Vol. 13 No. 22 November 15, 1941

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY NEWS LETTER.

The official organ of the Division, through which the staff at widely separated locations is kept informed of the progress of technical and scientific investigations at Beltsville and at various field stations. The News Letter also carries administrative orders and memoranda with necessary explanations and directions. Since the material used is often of an informal and confidential nature it should not be published without the approval of the Division. Also, reports of field workers and others represent their personal opinions, and so are not necessarily the official and final word on the matters they may be discussing.

John A. Ferrall, Editor

Vol. XIII U. S. Horticultural Station, Beltsville, Md. No. 23
December 1, 1941

Food for Freedom! "Assuring ample production of every farm commodity necessary to national defense is the chief order of business in the Department of Agriculture today," says Secretary Wickard, quoted in BPI Memo. 1243 of November 5th, enclosing the folder "Your Farm Can Help" that points out how the individual farmer may aid with the vast Farm Defense Program now being put into effect. The Department is helping farmers organize this program, in which definite goals will be set, the amounts of all the chief products designated, and the necessary acreages estimated. The program will give the Nation for the first time in history, a complete picture of anticipated farm production for the ensuing year.

"Food will win the war and write the peace." That's what Secretary Wickard says. "Food to feed our people properly; food for the democracies fighting freedom's battle. Food for the starving millions in Europe when the war is over. Not ordinary amounts of food but huge quantities. Far more of certain kinds than we have ever produced." For ourselves, the Secretary points out, we need to consume many more vegetables, especially the green and leafy vegetables, so rich in minerals and vitamins. We need to eat more of certain fruits and more tomatoes. Peanuts will be increasing in demand, particularly as a source of oil, since our imports of oils have already been reduced.

The Secretary does not feel that this increased demand will necessarily require more total acres than are now in cultivation. The emergency demands carefully planned production, with the farmer putting his full productive strength where it is most needed. With some things, such as wheat and cotton, for example, we already have more than enough.

EFFECT OF THINNING ON PEACH QUALITY

In the Fruit Products Journal for October 1941, H. H. Moon, C. W. Culpepper, J. S. Caldwell and A. T. Myers of our Division discuss the effect of load of fruit on the tree upon composition, flavor, and dessert and canning quality in 12 varieties of peaches.

Most of the information hitherto available has been derived from studies of the performance of branches partially isolated from the remainder of the tree by girdling. On such branches various definite ratios between numbers of fruit and area or numbers of leaves were established and the effects upon composition of fruit determined by comparisons with fruit borne by normal ungirdled branches of the same tree. The purpose of the studies here reported was that of determining the extent to which chemical composition and dessert and canning quality of a number of varieties of peaches would be affected by thinning as ordinarily practiced by growers. Many of the factors that determine the composition and quality of a fruit crop are, of course, largely or wholly beyond the control of the grower; but insofar as composition and palatability or dessert quality are determined by the load of fruit on the tree, there is the possibility of control being exercised by the grower.

Twelve pairs of 7-year-old peach trees of 12 different varieties were selected for uniformity in size and vigor of tree and in load and distribution of fruit upon the tree for use in this thinning experiment. The varieties included early-maturing, midseason, and late varieties, and both melting-fleshed freestone dessert and non-melting clingstone canning types. One tree of each variety was left unthinned, the other was so thinned as to leave the fruits approximately 6 inches apart, which required removal of about 60 percent of the fruits. Thinning was done on June 12. Ripening of the various varieties extended from July 31 to August 30. No consistent effects upon date of maturity as a result of thinning were observed. Collections of fruit from thinned and unthinned trees of each variety were made at intervals of two or three days over its ripening period for determination of weight, color, and dessert quality, and for chemical analysis. Portions were preserved by canning when at the optimum stage of maturity for the purpose.

The magnitude of the effects of thinning upon composition varied very considerably with variety, but the character of the effects was the same in all. The fruit from the thinned trees was distinctly superior in sweetness, in balance between sugar, acidity, and astringency--consistently higher at all stages of maturity in total solids, soluble solids, total sugars, reducing and non-reducing sugars (sucrose) and titratable acidity, all differences being statistically highly significant. The fruit from the thinned trees had on the average 40 percent greater weight and were superior in brightness of color and attractiveness. While there was a reduction of some 20 percent in gross yield as a result of thinning in spite of the gain in average size and weight of the thinned fruit, the amount of marketable fruit from the thinned trees was greatest.

DECIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz, Hood River, Oreg.

"Canker Fruit Rot Tests: Newtown apples in an orchard previously showing a high percentage of canker rots in storage were sprayed comparatively with three different copper compounds," he says in his report for October. "Over 300 boxes of this fruit has been washed in commercial machines at the Association and the fruit placed in separate lots for future observation. Since calyx injury appeared in several orchards previous to harvest, and further that rainfall has been considerable during the preharvest months, it is hoped we have something in this series which we have waited for in past years. The plots consist of the check trees, and those sprayed with copper phosphate, bordeaux, and basic copper sulphate.

"Anjou pear fruits from the orchard in which 32,000 gallons of the home made copper phosphate was applied have also been placed in storage for observation on the effect of copper phosphate in controlling canker rots in pears. Two sprayed plots and a check plot make up this series. The grower was very pleased with the results as far as injury was concerned. We could find no injury in the orchard which could be considered as caused by the copper spray."

Writing earlier he reported: "Pear Scab: Three points of interest may be mentioned: (1) A copper phosphate program again held its first position in regard to both scab control and fine appearance of the fruit. An outstanding nutritional effect was also apparent on the trees receiving this combination during the season; (2) a home-made copper phosphate, using trisodium phosphate and bluestone with the Bentonite-lime mixture proved to be non-injurious to Anjou pears when applied after the pubescence was gone from young fruits. The total cost of the mixture was about the same as paid for the wettable sulphurs, but it offers considerable more protection against scab. Since sulphurs cannot be used later in the season, and cannot be used over or with oil which is often necessary for spider mite control, the mixture has a distinct place in the local spray schedule. In most cases it would be recommended for use on Anjous only after the advent of hot weather. It would seem more desirable to use at least two sulphur sprays early for mildew control. A later copper phosphate spray would then be practical since our rains are somewhat spasmodic during the late summer season and the copper material offers more scab protection than sulphurs, and longer periods between covers is possible due to its lasting qualities. (3) When scab has already reached serious proportions in an orchard it is difficult to obtain good control with any program. However, a single copper phosphate spray applied during July reduced late scab infections by half and shows that this material applied to a less scabby plot at this time would be good insurance against late infections... Apparently pear scab is generally serious along the whole Pacific Coast this season for we have received many letters from California to Canada asking for information on pear scab control...

DICIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz (continued)

"Boron Deficiency on Pears: Data have not been completedly compiled on this study, but the pitting and cracking on Bartlett and Bosc pears has been corrected by the addition of borax to the soils. It appears from the observations made that Bartlett and Bosc pears are about equal in their boron requirement, while Anjou is somewhat more tolerant to a deficiency of boron.

"Stony Pit of Pears: Some additional budding work has been performed with parent stock varieties and our nursery put in final shape for the winter. Two specimens received from Prosser, Washington, showed what appeared to be stony pit in Anjou in one, while the other trouble could not be definitely determined, but appears to be related to an insect injury of the tarnish bug group. The same trouble has been prevalent in our district lately on Bartletts and Anjous and has much of the appearance described in Canada on apples as being due to virus termed 'false sting.'

"General Conditions: The pear crop was quite good outside the frost and scab areas. Bartletts sold from $40-$50 per ton, while the Association hopes to realize $60 per ton for the canned crop. Apples are very highly colored this season, but the quality is none too good, with sunburn, worms, and other causes taking a heavy toll. The labor shortage is still quite critical and stores closed several afternoons so clerks could help pick the fruit. The fruit men are 'razzing' the city folks about the 'city pack' which they will be forced to put up this year.

R. B. Wilcox, Pemberton, N. J.

"A number of cranberry growers completed their harvest on October 25th and it is thought that all berries have now been picked," he writes on October 31st. "Numerous reports from throughout the State indicate that the total New Jersey crop was approximately 60,000 barrels, as compared with an original estimate of 92,000. Work has been completed for the season on the cranberry hybrid seedlings.

"Blueberry bushes are beginning to drop a few of their leaves in some fields. The leaf drop has apparently been hastened by the extremely dry weather and, on some varieties, by heavy mildew infection. The bushes made very rapid growth during the rainy spell in midsummer, but the late growth has been deficient in most fields, due to dry weather. The set of fruit buds is moderately good in general but the lateral growth is short and light. We have taken numerous pictures of the stunt disease during the period and have done some survey work to determine the prevalence of the disease."

DECIDUOUS FRUIT INVESTIGATIONS

J. H. Weinberger, Fort Valley, Ga.

"Peach trees are almost defoliated in this section, principally because of the leaf rust disease," he reports November 3d. "There have been no killing frosts as yet this season. A number of growers, have a large part of their peach prunning job completed. At the laboratory, about 1,000 peach seedlings from this year's crosses have been transplanted to 10-inch pots and are now from 1 to 3 feet in height. Several hundred more will be ready for transplanting in a few weeks, or when they 'break' from their present abnormal type of growth characteristic of some peach seedlings. Our greenhouses are filled to capacity."

SUBTROPICAL FRUIT INVESTIGATIONS

Walter Reuther, Indio, Calif.

Writing from the U. S. Date Garden on November 17th he says: "The date growers of the Coachella Valley started out the season with prospects for the largest crop on record--an estimated fourteen to fifteen million pounds (including soft varieties). In the November 1 issue of the News Letter Dr. Aldrich reported that the rains and periods of high humidity in late July and early August would cause an estimated 25 percent loss of the crop, due to side-rots. Since this estimate was made two additional periods of weather favorable for the development of side-rot of dates have occurred. During the three-day period October 22-24 rainfall amounting to 0.85 of an inch was recorded at the U. S. Date Garden and 1.49 inches was recorded November 12-13. These heavy rains during the ripening period, the checking and blacknose induced by the earlier periods of high humidity and rain, together with the cool fall which has made the harvest 4-8 weeks late, are the factors which make the 1941 season a very discouraging one for Deglet Noor date growers. Growers of varieties other than Deglet Noor, on the other hand, have sustained relatively little damage, and are having a fairly successful season.

"It will not be possible to make an accurate estimate of the total damage to this season's crop until most of it is harvested. However, an inspection indicates that the previous estimate will have to be revised upward. Well informed men connected with the date industry now estimate that from 30 to 45 percent will be lost due to side-rot, so that estimates for the 1941 crop now range between eight and ten million pounds. The fact that cullage of Deglet Noor is running two to four times normal at the packing houses is an additional indication of the severity of the damage. But the total loss in pounds of fruit is only a part of the story in terms of loss of returns to growers. The proportion of rots in the large, soft fruits which make the fancy grades are much greater than in the lower grades. It appears that this year gardens which normally produce a high proportion of fancy fruit will sustain the greatest losses."

NUT INVESTIGATIONS

B. G. Sitton, Shreveport, La.

"The pecan crop in this section of the State is nearly a complete failure," he writes November 8th. "The majority of the trees failed to bloom this spring and the few pecans that set were destroyed or badly damaged by the nut case bearer or the shuck worm. Premature defoliation has been severe in some orchards, especially in those which were not cultivated early enough in the spring to turn the old leaves under. Some of the other orchards had a heavy infestation of the black aphis and have lost a large percent of their leaves from that cause. As a whole I do not anticipate a heavy crop of pecans in this section in 1942. In the J. H. Fullilove orchard where our recommendations as to cultivation and spraying were followed on a part of the orchard the foliage is still in fair condition and indicates that the chance for a partial crop in 1942 is good.

"During the Army maneuvers a part of the J. Hill Fullilove orchard was utilized as a camp site. While the army was in the orchard several heavy rainfalls occurred and as the result of heavy trucks moving about the soil wasbadly puddled and cut into ruts. Mr. Fullilove and Captain Childress, an Army officer for settling damage claims, requested Dr. Alben and myself to assist them in arriving at an estimate of the damage. We were glad to do so because both parties were desirous of making an adjustment that would be fair and equitable. No damage was done to the above ground parts of the trees and although there probably was some damage to the roots, we believe that the principal damage was the puddling of the soil which caused it to dry very hard and compact. This condition will be abbreviated to a considerable extent by plowing this autumn and by the incorporation of organic matter through the growing of vetch. It is now too late to prepare the soil and seed vetch this fall. It will be interesting to watch this soil and the behavior of the trees in later years."

F. N. Dodge, Shreveport (Robson), La.

"Foliage is staying on the Stuart, Schley and Moneymaker trees that were sprayed with bordeaux or given complete sanitation," he reports November 8th. "I feel that we can expect a heavy crop of nuts from these trees next year. Unpruned Stuart and Moneymaker trees which have been neither sprayed nor given complete sanitation have been defoliated for so long a time that I feel that we cannot expect more than a light crop if any at all from them next year even though they have no crop on them this year. Pruning trees of these varieties by heading back has apparently not checked defoliation but the pruned trees have produced foliage in the summer which is on the tree in a good healthy condition at this time, and these pruned trees are sufficiently well foliated that they should produce good crops of nuts next year even though they have not been sprayed or been given any sanitation. It looks to me like a combination of orchard sanitation, if thoroughly practiced, plus the right type of pruning, should give results with Stuart and Moneymaker trees."

NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"The forepart of the week ending October 25th was spent largely in further field studies of the cause or causes associated with the decline of walnut orchards in Oregon.

"In a previous report reference was made to a preliminary investigation of the cause of the decline and death of a number of grafted Franquette walnut trees in a certain upland orchard located near Silverton, Oregon. I stated that the trouble in question greatly resembled winter injury, as the aerial portion was, with one exception, the only part of the tree showing evidence of damage. In an effort to supplement our existing knowledge of the factors associated with the decline and death of the trees in question, further studies were made during the last week in October of the root systems of a number of the affected trees and of the character of the soil in which the orchard is located.

"A number of exploratory trenches were dug in various parts of the orchard and the roots encountered and the soil profile studied. Over 75 percent of the roots excavated were found located in the first foot of soil, with almost all of the remainder in the second foot. There were only a very few roots in the third foot and practically none in the fourth foot. At the fourth foot level a tight 'hard-pan' layer was encountered. A relatively large percentage of the roots in the second foot and in the deeper lying levels were dead. The top soil on which this orchard is located is a clay loam and the subsoil a very tightly compacted clay. Because of its compact nature, the subsoil is undoubtedly very poorly aerated. This soil is obviously not adapted to walnut culture. Under these adverse conditions it seems reasonable to assume that the vitality of the trees has been so lowered as to render them susceptible to damage by moderately cold temperatures that would not harm vigorous trees growing under favorable conditions. Moreover, the same adverse conditions would decrease the vitality of the fine feeding roots and render them susceptible to attack by soil fungi which are normally non-parasitic...

"The walnut harvest is just about at an end. The current Oregon walnut crop is one of the largest, if not the largest, on record. Moreover, the quality of the yield is, in general, very good, with a large percentage of well-filled nuts. However, there are more 'red' nuts in the crop than usual. The cause of this 'red-shelled' condition is somewhat of a mystery.

"One day during the week was spent in further field studies on the relation of spraying walnuts for the control of blight to the yield. The last picking of nuts was made from a representative number of trees in certain sprayed and untreated plots in an orchard near Scholls, Oreg. The records show that spraying with either bodeaux mixture, copper oxalate or yellow cuprous oxide results in a paying increase in yield..."

NUT INVESTIGATIONS

John R. Cole, Albany, Ga.

Writing from the U. S. Pecan Disease Field Laboratory on November 1 he says: "The pecan price situation is different this year than I have ever noted before. The Stuarts are more in demand than any other variety, and it is very difficult to sell Schley at any premium whatsoever. In fact, a number of buyers have told me that they did not want Schley as they could get good Stuarts at the same price.

"The reason for this is the fact that a large proportion of the improved varieties are being cracked and Schley meats break easily and those broken pieces do not bring any kind of a premium. On the other hand, the Stuarts crack out much better. There is another reason, too, and that is since roadside stands are marketing a considerable portion of the crop, Stuarts will keep longer when brought out of cold storage during the summer months than will the Schley, as will most other varieties, so it looks as if we will have to about-face and begin recommending the Stuart variety as one of the important ones to plant. As a matter of fact, in the Taylor orchard over a six year period the Stuarts have outyielded the Schley in the amount of 50 pounds of nuts per acre. Since thay are resistant to the scab disease they are netting more per acre than are the Schley nuts in our experimental plots in the Taylor orchard."

DO YOUR OFFICIAL SHOPPING EARLY!

In connection with your Christmas shopping, we trust that you will be giving serious thought to your official shopping, too. We have just received urgent reminders from the Department's Budget Office and from the Bureau concerning the importance of avoiding heavy expenditures toward the end of the Fiscal Year. As you know, a new procedure was adopted this year by which we were required to make financial allotments by quarters--July-September, October-December, January-March, and April-June. These were fairly uniform, though we recognized that our work will inevitably increase expenditures in certain periods. The situation is further complicated, of course, by the National Defense Program. It is certain that time for delivery will be extended greatly in some cases, that substitutions will be necessary in others, and that in some instances the needs of the Division will have to be completely subordinated to the requirements of the National Defense Program.

It is very important that you anticipate your purchases of supplies and equipment in a manner to avoid buying in "bunches," and that means that you must go over your stock of such things as glassware, chemicals, office and field supplies, frequently -- especially at this season of the year so that you can get in your orders during what is usually our slack season, between now and the end of February, say. Please place your orders and get in your bids as soon as you can. You can't get them in too soon!

NATIONAL SCRAP IRON COLLECTION CAMPAIGN

"As you have no doubt seen in our local press, the Department of Agriculture is conducting an aggressive campaign on a national basis for the collection of scrap iron," says Bureau of Plant Industry Memorandum 1246 of November 12, 1941. "There is urgent need for iron and steel scrap to speed our program of national defense. The Department's campaign is directed primarily to the farmers of the United States as our farms are one of the most important sources of scrap supply. Scrap steel is needed to combine with pig iron in the steel furnaces. Shutdowns are threatened in some mills unless the supply can be increased. On our field stations there is undoubtedly a considerable amount of scrap iron which is of no further value in our work and should be promptly made available in this defense effort.

"Under date of November 1, 1941, a memorandum was sent to Heads of Divisions calling attention to a program for the repair of farm machinery with a view to the continued use of machinery which might, under normal circumstances, be replaced with new machinery. (News Letter, November 15, page 275) Simultaneously with the study being made to accomplish these repairs, all scrap iron should be collected and quickly made available to the agencies conducting the national scrap iron collection campaign. Quite probably, at all of our stations there is some old machinery past productive use and not worthy of repair. This is an opportunity to not only make a substantial contribution toward our defense, but to clear our stations of decrepit equipment.

"It is of urgent importance that this matter be called to the attention of every station superintendent, with the request that the matter be given his personal consideration," says Dr. Auchter.

P. S. This does not mean that the Regulations can be waived that require Boards of Survey to dispose of wornout non-expendable equipment!

RYALL JOINS THE BELTSVILLE FORCE

Mr. A. Lloyd Ryall of our Section of Handling, Transportation, Storage, and Market Disease Investigations, has been transferred to the U. S. Horticultural Station, Beltsville, Md., where he will make his headquarters in future, taking over the work formerly handled by Mr. Earl D. Mallison, now Major Mallison, U.S.A.

Mr. Ryall has been in charge of the activities of the Section at Yakima, Wash., but this station has been discontinued and the work there will in future be supervised by Ed Smith and Company from Wenatchee, Wash.

During the past summer Mr. Ryall has been working with Bill Pentzer most of the time, helping with work on cherries, plums and pears in California.

He and Mrs. Ryall and their two children have now taken up residence near the Beltsville Station.

DISPOSING OF BOTH THE LAMB AND THE WOOL

Remember the News Letter's story of a corporation president who asked an employee for a certain paper and stood by while the latter rummaged in his desk looking for it? The paper refused to appear. The face of the employee grew red. The president, new to the job, did some rapid thinking. He went from desk to desk demanding: "Do you know what is in that drawer?" The employee usually replied that he did, but called on to describe the drawer's contents he invariably failed. "Dump the contents of that drawer out back of the building," directed the new president. When all desk holders had done this, the president touched a match to the pile of papers and other materials. It was a rather costly illumination back of the building, and quite a few important records were destroyed, but the president has always insisted that in the long run it was one of the most efficient things he ever did.

What we are getting at is that this lack of reverence for the contents of desk drawers -- or even files -- appears to be spreading. At least the Procurement Division of the Treasury Department has recently sent out a notice stating that documents and miscellaneous records, some of them rather important and confidential, have been found in desk drawers and files where the furniture was turned in as surplus property to be disposed of in some way. We're sorry, but the corporation president above referred to isnot running this shop, so you'll have to be on your guard in turning in unneeded desks or filing cases, to make sure they do not contain documents and materials of value.

PASSENGER RESERVATIONS AND CANCELLATIONS

Under the present heavy demand the nation's passenger transportation systems at time find it difficult to cope with unusual demands because of equipment limitations, says a notice of October 21, 1941, from the Office of Budget and Finance of the Department. It is therefore essential that the Department's travelers make reservations as far in advance as practicable. This is particularly true when groups wish to travel together on a given train or plane. From this it follows that reservations should be requested just as soon as possible after the trip has been authorized and the itinerary determined. In this way the carriers can anticipate required equipment in sufficient time to provide it.

As a corollary it is incumbent upon the traveler to enter cancellation just as soon as it is found that the space reserved will not be used. Air lines have complained that failure to notify them of inability to use reservations causes flights supposedly "sold out" to depart with empty seats, thus causing loss of revenue and uneconomical use of transportation facilities. It is only fair that in consideration of the carriers' reservation service the Department should reciprocate by way of entering prompt cancellations if reservations will not be used, and such action is urged regardless of the mode of travel.

ADMINISTRATIVE REGULATIONS

Recently the Business Office requested information from field employees in connection withtheir use of the Department Regulations--whether they found the book useful, kept it up to date by inserting amendments, etc. Among the replies was the following:

"I'm glad you brought this up. This Regulations book has been something I've wanted to talk about for a long time. With one on hand there is never any excuse for being out of work. Just why I need a copy is something I would like an additional opinion about. One in the field can never have any confidence that it is up to date; that a decision based on a paragraph asfound in the book is valid, for the reason that a newer and still more vague amendment is probably on the way. As a book of etiquette it has some merit. As a mentor of policy it has some weaknesses, as the gentle rain of amendments demonstrates.

"In spite of the paper stringency there is a constant flow of memoranda from innumerable agencies. Whether they precede or follow the Regulations I can never be sure. However, one and all can generally be summed up in a single word: NO! For most decisions the harassed provincial has to write in for a final answer, and have his disappointment confirmed. But perhaps one does need the Regulations. They are like the beneficial fleas on a dog. At any time you know the rules won't be changed for your advantage. It is like backing into a cactus: You know what you want to do but you can never get around to do it!"

We have a suspicion that this correspondent voices the opinions of a good many of his field associates, but it is a condition and not a theory we face--the Regulations must be obeyed. Believe it or not, too, the seeming contradictions can usually be explained--with a little effort of course. Be that as it may, you can take the News Letter's word for it that Roy Gillette really tempers the wind to the shorn lambs and showers upon you a mere 11 percent of the orders, amendments and revisions that reach his desk. They are going to be even less--in that form--in future. The necessity for conservation of paper means that fewer separate memoranda and notices will go out. We will have to restrict such notices of rulings, etc. largely to the pages of the News Letter.

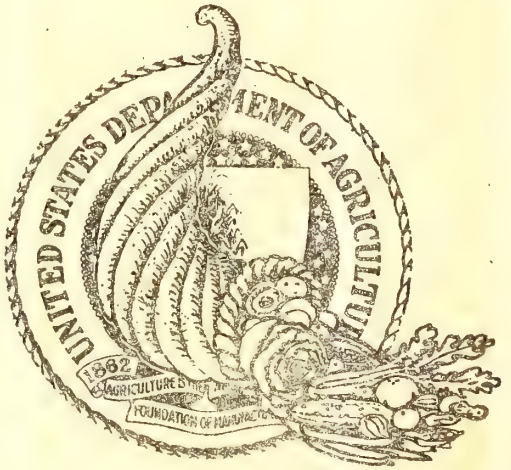
READ THE NEWS LETTER! Your editor has for some time had a feeling that the only way to get the News Letter read carefully and regularly would be to amend the Regulations, making it compulsory, but this paper shortage appears to be a pretty good substitute. The News Letter, like the organization it seeks to represent, tries to be an instrument of service. It wants to help you--to make your work more interesting, easier, and more effective. In addition to the orders and regulations it must set before you, it touches on different phases of the Division's activities past, present and to come, in the belief that once you have grasped the importance of the work, you will not need to be told that you have been presented with an opportunity for service--not merely given a job to do.

Vol. 13 No. 23 December 1, 1941

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R.

The official organ of the Division, through which the staff at widely separated locations is kept informed of the progress of technical and scientific investigations at Beltsville and at various field stations. The News Letter also carries administrative orders and memoranda with necessary explanations and directions. Since the material used is often of an informal and confidential nature it should not be published without the approval of the Division. Also, reports of field workers and others represent their personal opinions, and so are not necessarily the official and final word on the matters they may be discussing.

John A. Ferrall, Editor

Vol. XIII U. S. Horticultural Station, Beltsville, Md. No. 24
December 15, 1941.

Farm Defense Program

Our Christmas message to you this year brings an opportunity for service--the greatest opportunity for service to humanity ever offered the agricultural interests of a nation. The Department is helping farmers organize a vast Farm Defense Program, enlisting their aid in the selective increase of food products. The increase is to be selective because the Program wisely proposes to concentrate on foods vitally essential. Dietary goals to serve as a guide were announced early in 1941 by the National Research Council's Committee on Food and Nutrition, and diet plans to meet this new yardstick have been worked out by the Department's Bureau of Home Economics. Beginning Thursday, December 11, and each Tuesday thereafter, the USDA will present a radio program on "American Agriculture Mobilizes," over the National Farm and Home Hour, giving "grass roots reports on Food for Freedom."

Farming as usual will not be sufficient; not by a long shot. Assuring ample production of every farm commodity necessary to national defense has become, as the Secretary points out, the chief order of business for us. From the standpoint of our Division, it is important to know that it has been estimated that to supply a "best adapted diet" for our own 134,000,000 people, exclusive of the needs of the war torn countries, demands more than twice as many leafy, green and yellow vegetables, and at least a fourth more tomatoes, citrus fruits and other vitamin C-rich foods than the average consumption during the years from 1936 to 1940, inclusive. The leafy vegetables include such things as kale and turnip greens; green vegetables, snap beans, peas, etc.; and yellow, vegetables such things as the carrot and squash. We need a greatly increased supply of peanuts to furnish additional edible oil, the imports of which have been drastically reduced.

Quality as well as quantity must be considered in connection with the program. We are already directing efforts toward the production of tomatoes with higher vitamin C content; and new cabbage lines developed at the Regional Vegetable Breeding Laboratory at Charleston, S. C. are especially rich in this important vitamin.

Fruit production cannot be expanded as easily as vegetable growing, but we have at our disposal a means of adding to the quantity of good fruit available to consumers. The rich store of research information accumulated through our studies of handling, transportation, storage, market diseases, and utilization of farm products points the way to important reductions in waste, and the improvement of the quality of the product. For that matter, the work on vegetables falls into two rather distinct sections-- the first looking toward the desired increase in production, and the second seeking to reduce waste in harvesting and handling.

While it has been estimated that to supply a best adapted diet to our own population would require some 21 billion pounds of leafy, green and yellow vegetables alone, or the planting of 2,500,000 additional acres, the Secretary points out that the new farm program as a whole does not necessarily mean the utilization of more total acres than are now in cultivation. It will require more production of many things, but in other crops, such as cotton, wheat and tobacco, for instance, we appear to have more than enough already. The program thus calls for a selective increase in production. Some increase is desirable in vegetables for fresh use and in those needed for canning purposes, for example, but the largest increase sought will be in the number of farm gardens.

"Production goals have been set to guide farmers in this effort," says the interesting little folder 'Your Farm Can Help,' being widely distributed by the Department. "The needed amounts of all the chief products have been determined. The acreages necessary to get the amounts have been estimated. These national goals have been broken down into State and county goals. The county and State goals have been checked and often revised by local farmers and agricultural officials to make them fit local conditions. The county goals will be divided among the farmers of the country. Every farmer will be visited and asked to make a 1942 plan that will contribute to meeting the goals. It will all be voluntary."

County U. S. Department of Agriculture Defense Boards have been created to supply farmers with information in planning their participation in the program. The grower may consult any member of this county board for details. You will, of course, cooperate in any way you can with the board in your locality.

This, then, is your Christmas gift for the year--an opportunity for service. We feel that you will keep yourself informed of the progress of this important program in order to be able to help in any way possible. It is a tremendous task that faces us. We can do it. We <u>will</u> do it!

FARM DEFENSE PROGRAM: PRODUCTION GOALS

The following table, taken from one of the Department's Press Releases, will give you an idea of the magnitude of the program and a picture of full production goals, as it indicates average and present production of the crops involved--and the 1942 goal or expected production.

Commodity	Unit	1936-1940	Est. 1941	1942 goal
Milk and Eggs				
Milk	lbs.	106,640,000,000	116,809,000,000	125,000,000,000
Eggs	doz.	3,400,000,000	3,676,000,000	4,000,000,000
Meat Animals				
Hogs	No.	63,196,000	71,000,000	79,300,000
Beef, veal	slaughtered	24,850,000	25,100,000	28,000,000
Chickens	"	644,000,000	680,000,000	750,000,000
Lamb, mutton	"	21,902,000	22,400,000	22,900,000
Feed Grains and Hay				
Corn	acres	93,980,000	87,363,000	87-1/2 to 90 mil.
Oats	"	36,992,000	38,197,000	About 40,000,000
Barley	"	12,881,000	14,813,000	14-1/4 to 14-1/2 mil.
Grain sorghums	"	9,303,000	9,285,000	9-1/4 to 9-1/2 mil.
All hay	"	69,025,000	73,933,000	74 to 75 million
Cotton, Wheat and Tobacco				
Cotton	acres	27,858,000	23,519,000	22 to 24 million
Wheat	"	72,049,000	63,503,000	50 to 55 million
Tobacco:				
Flue-cured	"	955,600	747,700	About 762,000
Burley	"	388,000	363,900	" 358,000
Other domestic	"	297,200	264,900	" 247,000
Oil Crops				
Peanuts, threshed	acres	1,736,000	1,908,000	1,600,000 for nuts 1,900,000 for oil*
Soybeans for beans	"	3,433,000	5,550,000	7,000,000
Flaxseed	"	1,696,000	3,228,000	Same as 1941
Forest Products				
Lumber	Bd.feet	24,800,000,000	31,500,000,000	32,000,000,000
Pulp wood	Cords	9,300,000	15,000,000	15,800,000
All other wood	Cu.ft.	5,300,000,000	5,850,000,000	6,100,000,000
Naval stores:				
Turpentine	Bbls.	452,000	285,000	400,000

* In addition to peanut acreage allotments

FARM DEFENSE PROGRAM: PRODUCTION GOALS (continued)

Commodity	Unit	1936-1940	Est. 1941	1942 Goal
Fruits				
Citrus fruits	Tons	4,800,000	5,200,000	Since fruit production cannot be quickly increased, emphasis will be on better distribution and the prevention of waste.
Deciduous Fruits:				
Fresh use	Tons	9,000,000*	9,600,000*	
Canned	Cases	28,300,000	33,000,000	
Dried	Tons	550,000	600,000	
Vegetables				
Commercial Vegetables:				
Fresh use	acres	1,824,000	1,843,000	1,935,000
Processed	"	1,319,000	1,487,000	1,500,000
Farm gardens	number		4,431,000	about 5,760,000
Potatoes and Sweetpotatoes				
Potatoes	acres	3,132,000	2,988,000	about 3,060,000
Sweetpotatoes	"	836,000	843,000	" 850,000
Sugar, Rice and Beans				
Sugar	acres	.....	Cane, 285,000 Beet, 800,000	No acreage limit excepted
Rye	"	3,533,000 (harvested)	3,436,000 (harvested)	Same as 1941
Rice	"	1,047,000	1,186,000	1,200,000
Dry beans	"	1,880,000	2,220,000	Same as 1941

*Total fresh production for all uses, except that non-commercial apples are not included.

"TECHNICOLOR" SHIPPING TESTS FOR FRUIT

In our Christmas greeting, opening this issue of the News Letter, we mention incidentally that fruit production cannot be expanded as easily as vegetable growing, but that we have at our disposal a means of adding to the quantity of good fruit available to consumers. The rich store of research information accumulated through our studies of handling, transportation, storage, market disease and utilization of farm products points the way to important reductions in waste and the improvement of quality of the product. We will now proceed to a demonstration of the fact that we not only have this rich store of information, but we are using it--and adding to it!

Plums and pears formed the subject of tests to determine the factors affecting their quality when shipped from California to New York. This is a cooperative piece of work with the California Tree Fruit Agreement (under AAA auspices) and the University of California. As one feature of the test, color photographs of fruit shipped in test packages were made under identical lighting conditions in California (before shipping) and in New York City (on arrival). Mr. Fisher tells us that Messrs. Pentzer, Barger and Ryall of his section were assigned to the work in California, while Messrs. Bratley and Wiant handled the shipments on their receipt in New York. The University California assigned several men and the Tree Fruit Agreement had one man in California and one in New York working with us. Its men, too, did the color photography. These "technicolor" pictures tell a very effective story indeed. They are being used this winter to show growers just what happens to their fruit on the way to market when it is handled in different ways: Precooled vs no precooling, and different degrees of precooling; also what happens when the fruit is picked at different stages of maturity.

Mr. Fisher found that results with plums were hard to summarize for the reason that the buyers of this fruit happen to require plums at different stages of ripeness, depending on the purpose for which they need them. A lot of the plums, for example, are bought at New York for export to South America. These buyers want plums that are pretty green. The fruit-stand trade in New York, on the other hand, wants plums riper than they are usually able to get them.

With Bartlett pears, however, the story unfolds in a very interesting and satisfactory manner. Heretofore, for example, there has been a lot of trouble with pears, especially with the so-called "River" Bartletts, grown along the Sacramento River. The receivers have been complaining that these pears would break down without ripening. In fact the pears acquired such a bad reputation a couple of years ago that the whole production fell under suspicion. Mr. Fisher and his workers started to study the situation, and figured that the difficulty might be caused by the lack of good precooling and adequate transit refrigeration. They believed, too, that possibly the maturity of the pears at harvest had

had something to do with it, but they found that the cause of the trouble was at the market end, and that regardless of the stage of maturity when picked, or the thoroughness of precooling, or the transit refrigeration given, the pears would begin to show watery breakdown after being unloaded at New York. Fortunately our section of handling, transportation, storage and market disease investigations had already planned an innovation in ripening procedure, a procedure that involved using both air temperature (laboratory room) and a temperature of 65°F. Mr. Fisher and his staff had installed refrigeration facilities, transferred from Arlington Farm when they moved from there, that made the plan feasible.

To make a long story shorter, they found that the pears ripened at 65°F. without a trace of breakdown. BUT--those ripened at room temperatures, around 80 to 90°F., always developed from 25 to 50 percent breakdown! In addition, it was found that the pears held at 65°F. ripened faster, developed better color, and a more luscious flavor than those held at the higher temperatures.

Just to demonstrate their versatility, the boys tried the test the other way around. Toward the end of the shipping season it got considerably cooler in New York, meaning that they no longer encountered the hot room temperatures. That didn't bother them at all. They reversed their procedure and put some of the pears in a room heated to 84°F. and compared them with pears ripened outside--at 70°F. or lower. They got the breakdown in the heated room, but found none in the pears ripened outside.

Well, that's the way we add to our fund of research information. In this particular test our investigators encountered something utterly new in this field, and it seems quite certain that California growers are going to be able to profit materially by our findings. Apparently they do not need to spend more money on precooling, but the demonstration shows rather clearly that they do need to provide favorable ripening facilities to put good pears into the hands of the consumer.

The same boxes were photographedat both ends of the line. Test lots were carefully selected, loaded in different parts of the car, and finally ripened under controlled conditions, giving a very complete story. In all, 40 cars of plums and 38 cars of pears were included in the test. All were forwarded in pairs, one thoroughly precooled and the other not precooled or given the usual commercial precooling.

Whether this piece of work impresses you or not, it is quite certain that Messrs. Pentzer, Barger, Ryall, Bratley and Wiant will not forget it for some time. For about two months they probably had a single Sunday off--and somebody had to be on the job nearly every night getting precooling records in California and unloading cars in New York, besides all of the other work that had to be done during the day!

AVOCADOS BOOMING

"Twenty-five years ago the avocado was definitely a table luxury, costing up to 75 cents each," points out a Department Press Release of November 30, 1941. "In flavor and quality it was inferior to the fruit the housewife now buys at the corner grocery for 10 or 15 cents. This change reflects the growth of the avocado industry resulting from scientific research. Much has been learned about the peculiar pollination cycles of different classes of avocado varieties, and about their adaptability to our southern climates.

"Today, avocados are marketed during every month of the year. California's main crop is produced from November to June, with some fruit during the winter months; Florida's during the fall and winter. Cuba supplies avocados in fall and summer.

"In 1929 California produced only 800,000 pounds of avocados, which brought $329.00 a thousand pounds. The farm value of this crop was $263,000. Florida's 1929 crop was 840,000 pounds, which sold for $71.00 a thousand, a $60,000 farm value. The total for the two states was less than a third of a million dollars.

"In contrast, California in 1940 produced 27,200,000 pounds of avocados, and Florida 1,760,000 pounds-- a total of 28,960,000 pounds. Although the market price had declined to an average of $52.60 per thousand pounds for both sections, and consumers paid correspondingly lower prices at retail, the farm value of the entire 1940 crop was more than a million and a half dollars.

"Imports of avocados from Cuba and island possessions of the United States have shown relatively little change."

The avocado is the subject of two of our important publications of the past year. The first is Circular No. 582, "Avocado Diseases in Florida," prepared by H. E. Stevens and R. B. Piper. This striking publication of 46 pages, with 15 fine plates, prepared with the helpful cooperation of avocado growers, county agents, and various members of the staff of the Division, has met a real need of this growing industry.

Last September there came from the press Circular No. 620, "Avocado Production in the United States," by Hamilton P. Traub, Carl S. Pomeroy, T. Ralph Robinson, and W. W. Aldrich, which points out that although the avocado has been grown to a limited extent in continental United States for over half century, the commercial shipping industry was established during the past twenty five years. The industry is definitely established on a commercial basis now, and is growing in importance rapidly. It is interesting to note that the two main producing States, California and Florida, differ so markedly in climate and soils, with resulting differences in variety and rootstock adaptations and cultural practices that they are separately discussed in the Circular.

ALLOCATIONS OF AGENT POSITIONS

Agents employed by the Division are all recommended under memoranda of understanding with cooperating agencies, dominantly the State Agricultural Experiment Stations. They are appointed under Schedule A, Rule 9, Civil Service Regulations: "1. (a) Agents employed in field positions the work of which is financed jointly by the Department and cooperating persons, organizations, or governmental agencies outside the Federal service."

This authority is granted on the basis that as the cooperating agency contributes substantially toward the work, the agency is entitled to participate in the selection of the individual and the determination of his salary. As all of our agents are employed under this clause, they are necessarily cooperative employees, and occupy unallocated positions, so that the salary need not necessarily conform to the Classification Act. However, cooperative employees whose full time is given to our work are considered Federal employees so far as the leave privilege is concerned. As long as an employee's entire time is devoted to the cooperative activity, that is, and he works under Federal supervision, he is entitled to leave even though his salary may be paid in part by the cooperating agency. If he is a part-time employee, or if his duties include only a portion of his time on the cooperative work, he would not be entitled to Federal leave privileges. When cooperative employees work under the supervision of a Federal employee, a statement to this effect should be included in personnel recommendations affecting the employee.

Allocation of Positions: When preparing recommendations to the Secretary in the case of personnel employed on a cooperative basis, we must include following the description of the duties a statement (1) as to whether the State or other cooperating agency contributes to the salary or furnishes services or equipment but retains no control over the salary or duties of the position, and (2) whether the State or other cooperating agency retains control either in whole or part of salary, or duties and responsibilities. Agent positions not controlled by the State or other cooperating agency will be allocated in accordance with the Classification Act; but agent positions controlled by the State or other cooperating agency will be established as unallocated positions. So be sure to give us all the necessary information to enable us to prepare requests for appointments and prevent the necessity of holding up such action while we correspond with you in regard to the various points discussed above!

T. ROY REID NAMED DIRECTOR OF PERSONNEL

On December 2, the Secretary announced the appointment of T. Roy Reid of Arkansas as Department Director of Personnel. Mr. Reid, a veteran agricultural worker, has served for the last several months as Chief Assistant to the Secretary. As Director of Personnel, he succeeds Roy F. Hendrickson, recently appointed SMA Administrator and Director of Marketing. Samuel B. Bledsoe, who has been an assistant to the Secretary, has been named Chief Assistant to the Secretary.

REVENUE ACT OF 1941

"Inquiries have been received concerning the Revenue Act of 1941, Public Law 250, 77th Congress, Chapter 412, HR-5417, and the effect of the provisions of the Act upon the procedures followed by the bureaus and offices of the Department in the adjustment or refund of taxes imposed upon manufacturers, producers, importers, etc., in cases where the articles or services in which taxes are paid are for the exclusive use of the Government," says Budget and Finance Circular 504 of November 21, 1941.

"As to bids opened on and after October 1, 1941, there appear to be no new principles involved in the provisions of this Act except the addition of new articles and services taxed and the revision of the tax rate on articles heretofore subject to tax. Articles or services sold for the exclusive use of the Government are not subject to a tax, either by the agency of the Government making the purchase or by the manufacturer, producer, importer, etc., that sells such commodities or services to a Government agency; Provided, the necessary evidence is furnished the taxing agency that such articles and services were for the use of the Government. Heretofore this evidence has been furnished through the media of tax exemption certificates as provided in regulations issued by the Bureau of Internal Revenue and pursuant to General Regulations No. 86, Revised, issued by the Comptroller General of the United States June 11, 1937, and by the use of the Tax Data Sheet, Form AD-215. Where bids have been opened or contracts entered into prior to October 1, 1941, and the materials or supplies involved have not been delivered prior to October 1, 1941, tax exemption certificate may be issued therefor, provided it does not otherwise appear that title to the materials or supplies actually passed before October 1, 1941. Under normal circumstances where shipment is on a Government bill of lading, title may be considered to pass, or delivery effected when goods are delivered to the carrier.

"Pending the issuance of regulations as provided in the Revenue Act of 1941 and possible further revision of the General Regulations No. 86, Revised, the offices and agencies of the Department will continue the present practice of furnishing the vendor the necessary tax emption certificates. This will preserve our funds for needed articles and services without the additional payment of taxes, and will make it possible for vendors to meet Federal tax liabilities promptly without resorting to the procedures involved in obtaining refunds of taxes paid.

"No difficulty is anticipated in applying the provisions of the Act to the "transportation of persons" as such services will continue to be purchased largely by the issuance of Government transportation requests; thus making it unnecessary to furnish the transportation companies tax exemption certificates. Where such transportation service is paid for in cash it will be necessary to furnish tax exemption certificates."

A LITTLE CURRENT NEWS !

Conservation of Electric current — We are quoting below a memorandum from Mr. Charles A. Peters, Buildings Manager of the Public Buildings Administration, on the subject of conservation of electric current. Since it is very important that we cooperate in every practical way with the Public Buildings Administration in holding down costs for electricity, this memorandum is of interest to practically every member of the Division's staff:

"Your attention is again invited to the fact that bills for electricity for lighting and power in Government buildings maintained and operated by the Public Buildings Administration have been increasing from year to year. Inspections have revealed that on bright days during office hours lights which served no immediate purpose have been left on, those in space which is temporarily unoccupied have not been turned off, and at the conclusion of working hours occupants have left their respective offices without extinguishing the lights. It also has been noted that certain electrical apparatus has been left turned on after regular hours of duty resulting in a waste of current and in serious fire hazards.

"The country is now facing an emergency which will require each and every one of us in the Government service to conserve electricity which is vital to National Defense. If every effort is not made to prevent the waste of electricity, the Government may be forced to remove high wattage lamps and replace them with low wattage lamps in the lighting fixtures to make a reduction in the consumption of electricity. Therefore, it is urged that you again bring this matter to the attention of your employees to the end that their cooperation may be gained in the more economical use of electricity. Any action which you may take to effect such cooperation will be appreciated."

MILITARY TRAINING AND SERVICE

When an employee occupying a position "subject to return of an employee from military training and service," is ordered to active duty with the military or naval forces, he shall be retained in such position until the accrued annual leave applied for is exhausted. The employee, provided he does not hold a temporary or a probational-indefinite appointment, must then be returned to his former position and simultaneously placed on "furlough for military training and service." This action will become effective on the expiration of such annual leave. The employee, after completing his period of military duty is entitled to restoration to his former position or to a position of like seniority, status, and pay, provided he satisfies the necessary requirements of the Selective Training and Service Act in this respect.

Nov. 15, 1941. --Personnel Circular 100, Supplement 20.

SPECIAL - LEAVE - SPECIAL

Beginning January 1, certain changes will take place in the granting, recording and accounting for all leave. Preliminary advice on this matter was given in Dr. Magness' memorandum of September 3, 1941, sent to supervising officers at all field stations and laboratories.

It is very important that all slips covering leave taken in the calendar year ending December 31, 1941 be sent to the Business Office promptly. All leave slips must be in the Division in sufficient time for recording and transmission to the Bureau administrative officers before January 15, 1942--but THE SOONER THE BETTER!

If a period of leave extends from some date in December to and beyond January 1, 1942, then two leave slips are to be submitted; one for 1941 and the other for 1942.

CIVIL SERVICE EXAMINATIONS

It has been necessary the past seven months to furnish a statement granting permission for any one already employed in the Division before he could take additional Civil Service examinations. However, the Department has been granting assent for the examination and certification of employees under Executive Order No. 8760 since last May without once finding it necessary to decline. The Secretary therefore felt that it would be an economy to authorize blanket assent for all employees of the Department. A letter was sent to the Civil Service Commission October 29, 1941 by the Secretary stating that any employee of the Department may take Civil Service examinations or be certified from registers maintained by the Civil Service Commission without the written assent of the bureau or office in which he is employed. (The last paragraph of Personnel Circular No. 96, Supplement No. 24, dated June 14, 1941, is superseded by this letter.)

FURLOUGH OF EMPLOYEES WHO ENLIST VOLUNTARILY

In future, all employees who enter the armed forces, including those who enlist voluntarily, will be placed on furlough without pay for military service. Employees who, subsequent to May 1, 1940, have already entered the armed forces voluntarily, not under the Selective Training and Service Act, were separated from the service. When such persons are reemployed, they shall be considered as having been on furlough without pay for military training and service, and the action must be reported as return to duty. Any period intervening between the time the employee ceases to be in active duty status with us and the date of his actual induction into the military service should be covered by annual leave if available, or leave without pay. It is necessary to obtain the actual induction date because the 'furlough without pay for military training and service' must not be made effective prior to the date of actual induction into the military service.

Vol. 13 No. 24 December 15, 1941

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

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UNITED STATES DEPARTMENT OF AGRICULTURE

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